

Electronics Technology

Degree: A.S. - Digital Systems Technology
A.S. - Electronic Communication
Technology

Certificates: Digital Systems Technology
Electronic Communication Technology
Telecommunications Management

Certificates of Completion offered by the department:
Basic Electronics Assembly & Repair
CMOS Mask Design
Fiber Optics

Area: Technical Education
Dean: Gabriel Meehan
Phone: (916) 484-8354
Counseling: (916) 484-8572
Web Site: www.arc.losrios.edu/techvoc

Telecommunication Specialist
Telecommunications Field Technician

Electronic equipment is present everywhere in our lives. From computerized traffic signals to personal computers and cellular telephones, modern electronic systems make our everyday lives easier, safer, and more efficient.

Electronic technicians design, develop, build, install, repair and maintain sophisticated devices. American River College offers state-of-the-art training for electronic technicians in three areas: Digital systems technology, Electronic Communication Technology and CMOS Mask Design.

The American River College Program

The first two semesters of the ARC Electronics Program introduces the fundamentals of electronics and robotics, cabling, soldering, computer upgrade and repair, semiconductor applications and computer application integration.

Students specialized in the option of their choice during the third and fourth semesters, gaining extensive knowledge on specific topics relevant to their educational goals.

The Electronics Department works closely with local industry to insure that course are relevant, up to date, and satisfy the requirements of the industry.

The Digital Systems option focuses on digital and analog integrated circuits, microprocessor computer systems as well as computer software integration and development. Classes in robotics, programmable logic controllers, and microcontrollers keep pace with advances in industry.

The Communications option focuses on transmitting and receiving devices and associated products. Topics include AM, FM, telecommunications, radar and microwave communication systems. Classes in fiber optics, cabling, and FCC License preparation are included in this program.

The CMOS Mask Design option focuses on the design, layout, and manufacture of digital and analog integrated circuits. Students gain practical experience in component layout using advanced computer software. Major integrated circuit manufacturers use the same or similar software.

Career Opportunities

With the influx of high technology industries into Sacramento and the surrounding areas, the need for skilled Electronic technicians has been increasing and according to economic predictions will continue to increase.

Digital Systems Technology

Preparation for technician entry level positions in electronic computer technology. A grade of "C" or better is necessary in each of the required Electronic Technology courses for progression in the program and for an associate degree or certificate.

Requirements for degree major: **42 units**

Courses Required:	Units
ET 140	3
ET 143	2
ET 170	3
ET 180	3
ET 190	2
ET 300	2.5
ET 301	2.5
ET 306	2
ET 310	1.5
ET 311	1.5
ET 322	5
ET 330	5
ET 370	4
ET 420	5

Recommended Electives

ET 152, 162, 192, 194, 490

Requirements for certificate:	42 units
ET 140	3
ET 143	2
ET 170	3
ET 180	3
ET 190	2
ET 300	2.5
ET 301	2.5
ET 306	2
ET 310	1.5
ET 311	1.5
ET 322	5
ET 330	5
ET 370	4
ET 420	5

Recommended Electives

ET 152, 162, 192, 194, 490

General Education Graduation Requirements:

Students must also complete the general education graduation requirements for an A.S. degree. See graduation requirements.

Basic Electronics Assembly and Repair Certificate

Requirements for Certificate:	12 units
Courses Required	Units
ET 250	2
ET 300	2.5
ET 301	2.5
ET 306	2
ET 310	1.5
ET 311	1.5

Electronic Communication Technology

Preparation for technician entry level positions in electronic communication technology. A grade of "C" or better is necessary in each of the required Electronic Technology courses for progression in the program and for an associate degree or certificate.

Requirements for Degree Major:	42 units
Required Courses	Units
ET 110	5
ET 112	3
ET 140	3
ET 143	2
ET 152	2
ET 180	3
ET 300	2.5
ET 301	2.5
ET 306	2
ET 310	1.5
ET 311	1.5
ET 322	5
ET 330	5
ET 380	4

Recommended Electives

ET 130, 162, 192, 194, 387, 490

General Education Graduation Requirements:

Students must also complete the general education graduation requirements for an A.S. degree. See graduation requirements.

Requirements for Certificate:	39 units
Courses Required	Units
ET 110	5
ET 140	3
ET 143	2
ET 152	2
ET 180	3
ET 300	2.5
ET 301	2.5
ET 306	2
ET 310	1.5
ET 311	1.5
ET 322	5
ET 330	5
ET 380	4

Recommended Electives

ET 112, 130, 162, 192, 194, 387, 490

Fiber Optics Certificate

By earning a Fiber Optics certificate students are qualified for employment in the telecommunication industry as entry level Fiber Optics technicians. A grade of "C" or better is required for progression in the program and for the certificate.

Requirements for Certificate:	11 units
Courses Required	Units
ET 102	3
ET 152	2
ET 380	4
ET 387	2

Telecommunications Management Certificate

Requirements for Certificate:	18 units
Courses Required	Units
ET 100	2
ET 102	3
ET 104	2
ET 106	3
ET 108	2
ET 150	3
ET 160	3

Telecommunication Specialist Certificate

Requirements for Certificate:	17 units
Core Requirements	Units
ET 100	3
ET 152	2
ET 380	4
ET 387	2
Concentration Requirements	Units
ET 102	3
ET 112	3

Telecommunications Field Technician Certificate

Requirements for Certificate:	16 units
Courses Required	Units
ET 114	5
ET 115	5

Electronics Technology

ET 298	4	in switching systems caused by the next generation of Internet. Additionally,
ET 306	2	this course focuses on systems that transfer data from one location to another. Field trips are required.

CMOS Mask Design Certificate

By earning a CMOS mask design certificate students are qualified for employment at an entry level position at one of the numerous semiconductor design facilities. A grade of "C" or better is required for progression in the program and for the certificate

Requirements for Certificate: **13 units**

Courses Required	Units
CISC 320	1
CISC 321	1
ET 205	3
ET 206	3
ET 330	5

ET 10 Elements of DC Circuits 3 Units

Formerly: ET 200

Prerequisite: None

Course Not Transferable UC or CSU

Hours: 54 hours LEC

Basic course for those interested in electronics who do not meet the requirements for ET 300. Includes DC circuit analysis, powers of ten and basic algebra as related to electronics; satisfies the algebra requirement for ET 300 and 310.

ET 20 Mobile and Cellular Radio Systems 2 Units

Formerly: ET 207

Prerequisite: ET 102.

Course Not Transferable UC or CSU

Hours: 36 hours LEC

Nature of mobile radio signal and its properties. Statistical communication theory introduced and applied in four areas of mobile communications: propagation, received signal characteristics, functional design and system performance. Historic, legal and regulatory aspects of cellular radio industry. Covers specific services and features of the technology, control architectures and switching systems, and siting and economic considerations.

ET 30 Traffic Engineering for Voice and Data Systems 3 Units

Formerly: ET 208

Prerequisite: ET 102.

Course Not Transferable UC or CSU

Hours: 54 hours LEC

Course divided into two sections: Voice and Data. Voice: Overview of telecommunications traffic engineering. Basic engineering, formulas derived that permit economic analysis and analysis of trade-offs between grade of service and cost of equipment. Formulas interpreted and applied to typical situations found in the field. Data: Understanding of computer network topologies and access methods. Various transmission mediums are described and compared. Concepts of performance analysis using probability and queuing theory are discussed.

ET 100 Introduction to Telecommunications Systems 3 Units

Formerly: ET 52

Prerequisite: None

Course Not Transferable UC or CSU

Hours: 54 hours LEC

This course is an overview of the Telecommunication Industry focusing on both voice and data communication. Terminology, concepts and telecommunication practices are covered along with new and emerging changes

ET 102 Advanced Telecommunication Systems 3 Units

Formerly: ET 53

Prerequisite: ET 100 with a grade of "C" or better, or Telecommunications

Industry Experience.

Course Not Transferable UC or CSU

Hours: 54 hours LEC

This course expands on the concepts mastered in the Introduction to Telecommunication Systems course. Voice/data switching and transmission theory including system operation and design are covered in detail. Emphasis is placed on fiber optics and the newest methods of high speed data transfer. Also included are advanced high speed switching/routing systems along with their associated hardware/software. Dense Wave Division Multiplexing (DWDM) is also covered. Field Trips are required.

ET 104 Telecommunications Regulatory Policy 2 Units

Formerly: ET 62

Prerequisite: Electronic Technology 102.

Course Not Transferable UC or CSU

Hours: 36 hours LEC

Overall regulatory policy affecting telecommunications within the United States. Covers FCC policy evaluation, major FCC decisions, FCC policy impact, proposed legislation, AT & T divestiture and common carrier services.

ET 106 Voice Networks 3 Units

Formerly: ET 63

Prerequisite: ET 102.

Course Not Transferable UC or CSU

Hours: 54 hours LEC

Fundamentals of telecommunications technology with emphasis on the emerging stored program controlled digital network. Covers the integrated telecommunications network and the critical balance between service and cost. Examines present and developing telecommunications technologies. Students participate in a group case problem which stresses the integrated relationship among network components.

ET 108 Purchasing Telecommunications Systems 2 Units

Formerly: ET 79

Prerequisite: ET 102.

Course Not Transferable UC or CSU

Hours: 36 hours LEC

Covers telecommunication marketplace and explores present and future implications for organizational planners and decision-makers. Detailed planning process relative to selecting and implementing the telecommunication system that best meets organizational needs. Students participate in workshop planning exercises.

ET 110 Communications Systems 5 Units

Formerly: ET 81

Prerequisite: ET 330 and 380 with a grade of "C" or better.

Advisory: ET 180.

Course Not Transferable UC or CSU

Hours: 54 hours LEC; 108 hours LAB

Comprehensive study of high frequency communication concepts including transmission line theory, signal sources and processing methods. Emphasis given to microwave components, measurement and test equipment and measurement and test procedures. Laboratory assignments reinforce lecture theory and provide experience in microwave measurement techniques utilizing specialized equipment.

ET 112 Federal Communication Commission License Preparation 3 Units

Formerly: ET 88

Prerequisite: None

Advisory: ET 380 or Communication industry experience.

Course Not Transferable UC or CSU

Hours: 54 hours LEC

This course is preparation for the Federal Communication Commission (FCC) General Radiotelephone license examination. The course covers both the electronics theory required and the rules and regulations mandated by the FCC. Field trips are required. This course may be taken four times for credit.

ET 114 Basic Electricity and Electronics for Installation Specialists 5 Units

Prerequisite: None

Advisory: ENGWR 102 or 103, and ENGRD 116; or ESLR 320 and ESLW 320; or placement through assessment process.

Course Not Transferable UC or CSU

Hours: 54 hours LEC; 108 hours LAB

This course is an introduction to the concepts of Direct and Alternating Current Theory. It includes a detailed study of commonly used circuit components, mathematical concepts necessary for calculating circuit values, relationships of components in series, parallel and combination DC and AC circuit configurations and reading electrical diagrams and schematics. Emphasis is on applying electronic concepts to practical situations.

ET 115 Introduction to Telecommunications Cabling 5 Units

Prerequisite: None

Advisory: ENGWR 102 or 103, and ENGRD 116; or ESLR 320 and ESLW 320; or placement through assessment process.

Course Not Transferable UC or CSU

Hours: 54 hours LEC; 108 hours LAB

This course is an introduction to the concepts of cable installation and connection practices and standards. It includes a detailed study of commonly used cable types and connectors, installation tools, and test equipment. Emphasis is on applying installation techniques and standards to practical situations. Additionally, experience in the use of common and specific tools and equipment are provided.

ET 120 Technical Data Acquisition for the Electronics Technician 1.5 Units

Formerly: ET 65

Prerequisite: None

Course Not Transferable UC or CSU

Hours: 18 hours LEC; 27 hours LAB

This course introduces the electronics technician to the multi-media sources that are needed to access technical data. It will include retrieving technical data contained on CD ROM and world wide data banks in addition to downloading product updates and software drivers. Includes methods of obtaining new product information prior to formal release. Electronics resume' submission is discussed as well as information retrieval from world wide job boards. May be taken four times for credit.

ET 130 Introduction to High Definition Digital Television 3 Units

Formerly: ET 67

Prerequisite: None

Course Not Transferable UC or CSU

Hours: 54 hours LEC

This course covers the theory and operation of High Definition Digital Television. It covers the concepts and circuitry involved in this medium. Analogies between analog and digital systems are featured enabling an understanding of current technology. Field trips are required.

ET 140 Introduction to Personal Computers for Electronics Technicians 3 Units

Formerly: ET 68

Prerequisite: None

Advisory: ENGWR 102 or 103 and ENGRD 116, or ESLR 320, ESLW 320; BUSTEC 300.

Course Not Transferable UC or CSU

Hours: 36 hours LEC; 54 hours LAB

This course covers the technical use of the personal computer for the electronics technician. It includes the use of floppy disk drives, hard disk drive, mouse and laser printer. Emphasis is on learning and applying computer use to electronics industry concepts through critical thinking and problem solving unique to the electronics technician.

ET 142 Personal Computer System Analysis for Electronic Technicians 4 Units

Formerly: ET 94

Prerequisite: ET 170, 420 with a grade of "C" or better.

Course Not Transferable UC or CSU

Hours: 54 hours LEC; 54 hours LAB

This course covers the operation of the personal computer, based on IBM-compatible personal computers. Each sub-section will be studied, with emphasis on how it relates to the complete system. The initial setup and configuration of a computer system will be studied. The personal computer as a controller of peripheral equipment will also be studied in lecture and laboratory assignments.

ET 143 Computer Upgrade, Repair, and Assembly 2 Units

Prerequisite: None

Course Not Transferable UC or CSU

Hours: 18 hours LEC; 54 hours LAB

This course covers basic personal computer upgrading, repair, and assembly. Safety, terminology, component identification, file management, upgrades, and virus protection are among the topics that are covered. This class may be taken twice for credit.

ET 150 Data Network 3 Units

Formerly: ET 70

Prerequisite: ET 102.

Course Not Transferable UC or CSU

Hours: 54 hours LEC

Techniques and application in the Data Processing/Data Communications (DP/DC). Develops an understanding of the DP/DC environment from basic to intermediate levels. Provides terminology and concepts necessary to function effectively in the DP/DC environment.

ET 152 Beginning Fiber Optics 2 Units

Formerly: ET 86

Prerequisite: None

Advisory: ET 315, 320.

Course Not Transferable UC or CSU

Hours: 36 hours LEC

This is an introductory course in fiber optic theory and operation including the complete fiber optic communication system. It also includes terminology and knowledge of the tools and equipment associated with fiber optic installation and maintenance. Testing of the fiber optic systems will be performed using sophisticated equipment such as power meters and optical time domain reflectometers. May be taken twice for credit.

ET 160 Office Automation 3 Units

Formerly: ET 75

Prerequisite: ET 102 or equivalent.

Course Not Transferable UC or CSU

Hours: 54 hours LEC

Covers methods for developing a plan for using office automation and information resources management (IRM). Overview of strengths and limitations of automation and practical methods for interacting with vendors.

Electronics Technology

Fundamentals of local area networking (LAN) systems for effective design, and implementation and operation of advanced business communications networks. Focuses on the integration of future technologies into the office environment.

ET 162 Home Electronics and Power 1 Unit

Prerequisite: None

Course Not Transferable UC or CSU

Hours: 18 hours LEC

This course is an overview of the power and electronics used in the modern home. It covers the power distributed through the home as well as the appliances and communication systems used. The topics of home security, power conservation, alternate energy sources, and home automation are also covered.

ET 170 Programming for Electronics Technicians Using Visual BASIC 3 Units

Formerly: ET 76

Prerequisite: ET 322 (ET 315 and ET 320) and 140 with a grade of "C" or better.

Course Not Transferable UC or CSU

Hours: 36 hours LEC; 54 hours LAB

This course is an introduction to programming using the Microsoft Visual Basic programming language. The course involves problem solving unique to the electronics technician, including Ohm's Law, series and parallel circuits, and transistor amplifier circuits.

ET 180 Circuit Review and Application 3 Units

Formerly: ET 89

Prerequisite: ET 330 with a grade of "C" or better.

Course Not Transferable UC or CSU

Hours: 54 hours LEC

This course is a thorough review of electronics theory and devices with emphasis on circuit analysis and troubleshooting techniques. Commercial schematics are used in the review of DC/AC fundamentals, digital systems, analog circuits (bipolar and field effect transistors as well as op amps) and non-linear devices such as SCR's and triacs. This course is helpful in preparing for job interviews and is also refresher course for technicians currently employed in the field of electronics. This course may be taken twice for credit.

ET 190 Introduction to Programmable Logic Controllers (PLCs) 2 Units

Formerly: ET 90

Prerequisite: None

Corequisite: ET 330.

Course Not Transferable UC or CSU

Hours: 36 hours LEC

This course is an introduction to the operation and use of the Programmable Logic Controller (PLC), an electronic device that controls machines and processes. The PLC uses a programmable memory to store instructions and executes specific functions that include on/off control, timing, counting sequencing arithmetic, and data handling. Ladder logic is used in programming and troubleshooting the PLC. May be taken twice for credit.

ET 192 Introduction to Stamp Microcontrollers 2 Units

Prerequisite: None

Course Not Transferable UC or CSU

Hours: 36 hours LEC

This course covers the application and programming of the Parallax Stamp Microcontroller. Applications where the Microcontroller could be easily interfaced into common everyday electronic applications are explored. Unusual and innovative applications for the device are also investigated. Field trips are required. This class may be taken twice for credit.

ET 194 Introduction to Robotics 2 Units

Prerequisite: None

Course Not Transferable UC or CSU

Hours: 36 hours LEC

This course is an overview of how robotics and automation are utilized in industry. Hardware component selection, assembly and software programming

of various types of robotic assemblies are performed and analyzed. The principles of electronics, physics and engineering as they are applied to robotic design are presented. Field trips are required.

ET 196 Sensors, Measurement, and Control 2 Units

Prerequisite: None

Course Not Transferable UC or CSU

Hours: 36 hours LEC

This course is a detailed study of the physical world and the sensors which measure its properties. Signals from these sensors are converted for display and used to control physical properties such as temperature or pressure. Lecture and demonstrations reinforce theory and provide experience in sensor identification and troubleshooting. PLC's and STAMP micro controllers are used to simulate industrial situations.

ET 200 Computer Aided Drafting for Electronics 4 Units

Formerly: ET 92

Prerequisite: ET 140, 320 with a grade of "C" or better.

Corequisite: ET 330.

Course Not Transferable UC or CSU

Hours: 54 hours LEC; 54 hours LAB

This course will cover instruction in drawing electronic schematics and fundamental Printed Circuit Board layout, using IBM compatible computers and AutoCAD software. Intended for electronics students, technicians, and engineers, who have had no previous CAD experience.

ET 205 CMOS Mask Design I 3 Units

Formerly: ET 96A

Prerequisite: None

Corequisite: ET 330.

Course Not Transferable UC or CSU

Hours: 54 hours LEC

This course is an entry level integrated circuit (IC) layout and design in CMOS (Complementary Metal-Oxide-Silicon) technology. This course provides practical experience in drawing logic diagrams, transistor level schematics, cross sectional views, STIK diagrams, and in converting STIKS to the actual layout of the layers that will be used to manufacture the IC. The course stresses application of design rules, area estimation, and pin and bus placements.

ET 206 CMOS Mask Design II 3 Units

Formerly: ET 96B

Prerequisite: ET 205 with a grade of "C" or better.

Course Not Transferable UC or CSU

Hours: 36 hours LEC; 54 hours LAB

CMOS Mask Design II is a continuation of CMOS Mask Design I (ET 205). This course introduces more complex logic and design rules for integrated circuit layout. This course also includes practical experience in the use of a Unix-based integrated circuit design tool, Cadence VLE, from Cadence Design Systems.

ET 250 Employability Skills for Technical Careers (same as Automotive Technology 107 and Welding 150) 2 Units

Formerly: ET 118

Prerequisite: None

Course Not Transferable UC or CSU

Hours: 36 hours LEC

This course provides the opportunity of exploring technical careers while developing valuable work and life skills. It is an introduction to a variety of technically-related occupations. Emphasis is placed on exploring technical careers in the Sacramento area. Activities are designed to enhance personal development, employability skills, and self esteem through leadership, citizenship, and character development. AA/AS area E2

ET 294 Topics in Electronics Technology .5-5 Units

Formerly: ET 93

Prerequisite: To be determined for each topic.

Course Not Transferable UC or CSU

Hours: 9-90 hours LEC and/or 27-270 hours LAB

This is an individualized course developed in cooperation with industry to meet specialized training needs. It may be taken four times with no duplication of topics.

ET 298 Work Experience in Electronics Technology 1-4 Units

Formerly: ET 98

Prerequisite: None

Corequisite: Maintain a minimum of 7 units.

Course Not Transferable UC or CSU

Hours: 9-90 hours LEC; 27-270 hours LAB

This course gives practical experience to students who are training for careers in the electronics industry by providing actual supervised work at various electronics firms within the Sacramento area.

ET 300 DC Theory and Circuit Fundamentals 2.5 Units

Formerly: ET 30A

Prerequisite: None

Corequisite: ET 310.

Course Transferable to CSU

Hours: 27 hours LEC; 54 hours LAB

This course is an introduction to the concepts of Direct Current Theory including a detailed study of the components of Direct Current circuits, energy sources, circuit fundamentals, the relationship of current and resistance in series, parallel and combination DC circuit configurations and the principles of magnetism and electromagnetism. Emphasis is on learning and applying electronic concepts to practical situations through critical thinking. Laboratory activities provide hands-on experience in the operation and use of analog and digital test equipment in analyzing and testing of Direct Current circuits.

ET 301 AC Theory and Circuit Fundamentals 2.5 Units

Formerly: ET 30B

Prerequisite: ET 300 with a grade of "C" or better.

Corequisite: ET 311.

Course Transferable to CSU

Hours: 27 hours LEC; 54 hours LAB

This course is an introduction to the concepts of Alternating Current Theory including a detailed study of alternating current and voltage, transformers, inductors and capacitors. An in-depth study of resistance, impedance, capacitive and inductive reactance and the effect frequency has on each of these components when used in series and parallel circuit configurations. This course also includes the study of RC, RL, time constants and RLC resonant circuits. Emphasis is on learning and applying alternation current concepts to practical situations through critical thinking. Laboratory activities provide hands-on experience in AC circuit analysis that teach and stress the use of signal generators, frequency counters, analog and digital multi-meters, oscilloscopes and a variety of specialized electronic equipment in analyzing and testing of alternating current circuits.

ET 306 Electronics Fabrication and Soldering Techniques 2 Units

Formerly: ET 50

Prerequisite: None

Advisory: ET 300.

Course Transferable to CSU

Hours: 18 hours LEC; 54 hours LAB

This course covers the skills needed for identification and the safe and efficient use of hand tools and soldering equipment used in basic electronics repair. Fabrication, soldering/de-soldering techniques, electro-static discharge (ESD), assembly, and safety practices are covered. Field trips are required. This course may be taken twice for credit.

ET 310 Mathematics for DC Circuits Fundamentals 1.5 Units

Formerly: ET 51A

Prerequisite: None

Advisory: Concurrent enrollment in ET 300; ET 10, ENGWR 102 or ENGWR 103 and ENGRD 116, or ESLR 320 and ESLW 320 or placement through assessment.

Course Transferable to CSU

Hours: 27 hours LEC

This course covers mathematics for DC circuit fundamentals. Uses of powers of ten, algebra and other mathematical concepts necessary for calculation of resistance, DC voltage and current distribution in series, parallel, and combination circuits are covered. Computer-aided learning software including MultiSim 2001 (Electronic Workbench) will be used to assist in understanding how mathematical equations relate to electronic circuitry. AA/AS area D2

ET 311 Mathematics for AC Circuits Fundamentals 1.5 Units

Formerly: ET 51B

Prerequisite: ET 310 with a grade of "C" or better.

Advisory: ET 301.

Course Transferable to CSU

Hours: 27 hours LEC

This course covers the application of algebra and trigonometry for the mathematical analysis of AC concepts involving resistances and/or reactances in series, parallel and combination circuits. Computer aided learning software including MultiSim 2001 (Electronic WorkBench) will be used to assist in applying mathematical equations to electronic circuitry. AA/AS area D2.

ET 315 Mathematics for Semiconductor Theory 3 Units

Formerly: ET 60

Prerequisite: ET 301 and 311 with a grade of "C" or better.

Advisory: ET 320.

Course Transferable to CSU

Hours: 54 hours LEC

This course is a comprehensive study of the mathematics required for problem solving in semiconductor circuits. Concepts include algebra, vector algebra, load-line and graph plotting, logarithms and decibels and their application of power supplies and discrete bipolar and field effect transistor and integrated amplifier circuits.

ET 320 Semiconductor Theory 5 Units

Formerly: ET 61

Prerequisite: ET 301 and 311.

Corequisite: ET 315.

Course Transferable to CSU

Hours: 54 hours LEC; 108 hours LAB

This course is a detailed study of semiconductor devices such as junction diodes, bipolar and field effect transistors, op-amps and their use in power supplies and amplifiers. Laboratory assignments reinforce lecture theory and provide experience in assembling circuits from schematics, trouble shooting and the use of test and measurement equipment.

ET 322 Semiconductor Devices with Computer Analysis and Lab 5 Units

Formerly: ET 64

Prerequisite: ET 301 and 311 with a grade of "C" or better.

Course Transferable to CSU

Hours: 54 hours LEC; 108 hours LAB

This course is a detailed study of semiconductor devices and their circuit applications. Components such as diodes, transistors, and op-amps are studied, including their use and characteristics under operating circuit conditions in such devices as power supplies and amplifiers. Computer laboratory assignments utilizing MultiSim (Electronic WorkBench) are used to assist in understanding how mathematical equations relate to electronic circuitry.

ET 330 Analog and Digital Integrated Circuit Applications 5 Units

Formerly: ET 71

Prerequisite: ET 322, or 315 and 320 with a grade of "C" or better.

Course Transferable to CSU

Hours: 54 hours LEC; 108 hours LAB

This is an analog and digital application course that includes a complete overview of integrated circuits used in various industrial and consumer applications. Digital topics include digital logic gates, truth tables, counters, and decoder design and operation. The analog portion covers circuits utilizing operational amplifiers, comparators, timers, and phase lock loops.

ET 370 Microprocessor Machine Language Programming 4 Units

Formerly: ET 77

Prerequisite: ET 315 and 320 with a grade of "C" or better.

Corequisite: ET 330.

Course Transferable to CSU

Hours: 54 hours LEC; 54 hours LAB

This course provides an introduction to machine language software development. A custom designed 8 bit microprocessor trainer is used to demonstrate the use of software control of external devices. A custom assembler/emulator is also used for the simulation of I/O interfacing and for observation of internal CPU register operations. Laboratory activities emphasize software applications of I/O interfacing plus control and testing of hardware devices. AA/AS area D2.

ET 380 Introduction to Electronic Communications 4 Units

Formerly: ET 78

Prerequisite: ET 315 and 320, or 322 or 102 with a grade of "C" or better.

Course Transferable to CSU

Hours: 54 hours LEC; 54 hours LAB

This is an introductory course in electronic communications covering UHF, VHF, microwave, satellite and fiber optic communication systems. The individual system components including AM and FM transmitters, transmission lines, antennas and receivers are analyzed down to component level. Propagation, wave theory, decibels and signal transmission limitations are also covered. Technician safety, along with proper test equipment use is stressed throughout the class.

ET 387 Advanced Fiber Optics 2 Units

Formerly: ET 87

Prerequisite: ET 152 with a grade of "C" or better.

Course Transferable to CSU

Hours: 36 hours LEC

This course covers advanced Fiber Optic theory and operation. Fiber Optic systems are vital communication links that enable high speed transfer of video, telephone, and data to occur. Testing of Fiber Optic systems using sophisticated electro-optical test equipment such as the Optical Time Domain Reflectometer will also be included. This class also introduces the use of computer-based software to simplify Fiber Optic system design. May be taken twice for credit.

ET 420 Digital Electronic Systems 5 Units

Formerly: ET 85

Prerequisite: ET 330, 370 with a grade of "C" or better.

Advisory: Current enrollment in Electronic Technology 180.

Course Transferable to CSU

Hours: 54 hours LEC; 108 hours LAB

This course provides an integrated treatment of both the hardware and software aspects of digital systems. The focus is on the basic concepts underlying a microprocessor device, such as buses, machine cycles, various processes of data flow (parallel, serial, interrupts, and DMA), internal register architecture, programming, interfacing with memory, serial/parallel Input/Output devices, data converters (DAC/ADC), serial/parallel programmable I/O devices and stepper motors. Emphasis is on troubleshooting hardware and software problems, including the use of a logic analyzer for problem solving.

ET 490 Advanced Student Projects Laboratory 2 Units

Formerly: ET 83

Prerequisite: ET 330 with a grade of "C" or better.

Course Transferable to CSU

Hours: 108 hours LAB

This course provides an opportunity for students to pursue advanced projects selected by the Electronics department. This course may be taken twice for credit.

Job placement assistance is provided by the coordinator to find appropriate jobs. May be repeated for up to 3 units.