Electronics Technology

Electricity and Electronics Fundamentals

ELECT 1100 - 3 Credits

Basic concepts in electronics are studied. An overview of direct and alternating current, circuit laws, components, troubleshooting, and use of test equipment. Hands-on experience, projects, and practical applications are included. (2 lecture hours, 2 lab hours)

Circuits I

ELECT 1101 - 3 Credits

Introduction to basic concepts in electronics. An exploration of the basics in electricity and electronics. Topics include an overview of direct and alternating current, circuit laws, components, troubleshooting and use of test equipment. Teamwork, critical thinking and problem solving are emphasized. Hands-on experience and practical applications are included. Prerequisite: Electronics Technology 1100 or consent of instructor (2 lecture hours, 2 lab hours)

Circuits II

ELECT 1102 - 4 Credits

Advanced concepts in circuit electronics. Topics include filtering, resonance, time and frequency response, troubleshooting and use of test equipment. Hands-on experience, practical applications and projects are included. Teamwork, critical thinking and problem solving are emphasized. Prerequisite: Electronics Technology 1101 or consent of instructor (2 lecture hours, 4 lab hours)

Electricity/Electronics for Mechatronics

ELECT 1105 - 3 Credits

Basic concepts in electricity and electronics are studied. An overview of analog and digital electronics such as circuit laws, components, devices, troubleshooting, and use of test equipment will be examined. (2 lecture hours, 2 lab hours)

Introduction to Technology

ELECT 1110 - 2 Credits

Students will develop an understanding of the fields of technology such as computers, telecommunications, electronics, mechanics and other related fields. Through project based hands-on learning activities, students will have an opportunity to apply theory to real problems as they develop skills in solving technological problems. (1 lecture hour, 2 lab hours)

Introduction to Robotics

ELECT 1111 - 3 Credits

Introduction to fundamental robotic concepts, basic robot characteristics, and review of robotic applications. Hands-on experience, practical applications and projects. Teamwork, critical thinking and problem solving are emphasized. Prerequisite: Electronics Technology 1100 or equivalent, or consent of instructor (2 lecture hours, 2 lab hours)

Calculus for Electronics

ELECT 1118 - 2 Credits

Basic principles of differential and integral calculus and differential equations applicable to circuit analysis. Prerequisite: Mathematics 1432 (or college equivalent) or qualifying score on the mathematics placement test or qualifying A.C.T. math score and Electronics Technology 1102 or consent of instructor (2 lecture hours)

Electronic Documentation

ELECT 1120 - 2 Credits

Introduction to electronic drafting and documentation. Electronic schematics and documentation, printed circuit board documentation, and drafting techniques using computer assisted drafting and design (CADD). Components, symbols, and diagrams. (1 lecture hour, 2 lab hours)

Electronics Materials and Fabrication

ELECT 1130 - 2 Credits

Electronic equipment construction, assembly, repair, cable soldering techniques and fabrication. Coverage of the fundamentals of electronic design, fabrication and documentation, delineating various troubleshooting and test procedures, hands-on experience with connectors, fasteners, troubleshooting and testing of electronic systems. Testing of integrated circuits and personal computer boards. Concepts reinforced through student projects. Prerequisite: Electronics Technology 1100 with a grade of C or better or equvalent or consent of instructor (1 lecture hour, 2 lab hours)

Digital Fundamentals

ELECT 1141 - 3 Credits

Introduction to basic concepts in digital electronics. Basic discrete electronics, digital logic, circuit laws, components, troubleshooting and use of test equipment. Hands-on experience, practical

applications and projects. Teamwork, critical thinking and problem solving are emphasized.(2 lecture hours, 2 lab hours)

Digital Components and Architecture

ELECT 1142 - 3 Credits

A continuation of Digital Fundamentals. Digital components, digital architecture, digital systems, troubleshooting and use of test equipment. Hands-on experience, practical applications and projects. Teamwork, critical thinking and problem solving are emphasized. Prerequisite: Electronics Technology 1141 or equivalent, or consent of instructor (2 lecture hours, 2 lab hours)

Electronic Devices and Applications

ELECT 1151 - 4 Credits

Basic concepts in electronic devices. Topics include diode and transistor fundamentals and applications, operational amplifier circuits, measurement and control circuits troubleshooting, and use of test equipment. Hands-on experience, practical applications, and projects. Teamwork, critical thinking, and problem solving are emphasized. Prerequisite: Electronics Technology 1101 or equivalent, or consent of instructor (2 lecture hours, 4 lab hours)

Electronic Devices and Applications 2

ELECT 1152 - 4 Credits

A continuation of Electronic Devices and Applications I. Advanced concepts in electronic devices. Topics include diode and transistor applications, troubleshooting and use of test equipment. Hands-on experience, practical applications and projects. Teamwork, critical thinking and problem solving are emphasized. Prerequisite: Electronics Technology 1151 or equivalent, or consent of instructor (2 lecture hours, 4 lab hours)

Electronic Communications

ELECT 1161 - 4 Credits

Basic concepts in telecommunication electronics and circuits. Fundamentals of analog communications, such as amplitude modulation (AM), frequency modulation (FM), television and radio fundamentals, troubleshooting and use of test equipment. Hands-on experience, practical applications and projects. Teamwork, critical thinking and problem solving are emphasized. Prerequisite: Electronics Technology 1151 or equivalent, or consent of instructor (2 lecture hours, 4 lab hours)

Electronic Communication 2

ELECT 1162 - 4 Credits

A continuation of Electronic Communication 1. Advanced concepts in analog and digital communications and digital telecommunication circuits. Transmission lines, antennas, cell systems, networks, fiber-optics, troubleshooting and use of telecommunication test equipment. Hands-on experience, practical applications and projects. Teamwork, critical thinking and problem solving are emphasized. Prerequisite: Electronics Technology 1161 or equivalent, or consent of instructor (2 lecture hours, 4 lab hours)

Renewable Energy Fundamentals

ELECT 1201 - 2 Credits

Survey of renewable energy technology including wind turbines and solar photovoltaic (PV) power technology. (1 lecture hour, 3 lab hours)

Intro- Biomedical Instrumentn Technology

ELECT 1221 - 3 Credits

Introduction to operation and maintenance of biomedical equipment and instrumentation. Basic terminology, fundamental measurements, recording and monitoring of medical instrumentation will be covered. Recommended: Electronics Technology 1100 with a grade of C or better, or equivalent (2 lecture hours, 2 lab hours)

Selected Topics I

ELECT 1820 - 1-4 Credits

Introductory exploration and analysis of selected topics with a specific theme indicated by course title listed in college course schedule. This course may be taken four times for credit as long as different topics are selected. (1 to 3 lecture hours, 2 to 4 lab hours)

Independent Study

ELECT 1840 - 1-4 Credits

Exploration and analysis of topics within the discipline to meet individual student-defined course description, goals, objectives, topical outline and methods of evaluation in coordination with and approved by the instructor. This course may be taken four times for credit as long as different topics are selected. Prerequisite: Consent of instructor is required (1 to 4 lecture hours)

Electronics Technology

Green Energy Systems

ELECT 2001 - 3 Credits

Advanced study of principles of operation, testing, and diagnosis of green energy systems. These systems are evaluated both with discussion of theory, hands-on lab analysis and alternative energy systems feasibility study will be included of actual green energy systems. Prerequisite: Electronics Technology 1100 with a grade of C or better or equivalent or Electronics Technology 1201 with a grade of C or better or equivalent or consent of instructor (2 lecture hours, 2 lab hours)

Motor Control

ELECT 2112 - 3 Credits

Introduction to fundamental motor control concepts, basic control characteristics and review of control strategies. Hands-on experience, practical applications and projects. Teamwork, critical thinking and problem solving are emphasized. Prerequisite: Electronics Technology 1151 or equivalent, or consent of instructor (2 lecture hours, 2 lab hours)

Applied Electronics

ELECT 2201 - 5 Credits

A continuation of Electronic Devices and Applications II course. Advanced semiconductor circuits, linear and nonlinear op-amps, analog signal conditioning, and linear power supplies. Hands-on experience, practical applications and projects. Teamwork, critical thinking and problem solving are emphasized. Prerequisite: Electronics Technology 1152 or equivalent, or consent of instructor (3 lecture hours, 4 lab hours)

Advanced Applied Electronics

ELECT 2202 - 5 Credits

A continuation of Applied Electronics course. Practical semiconductor circuits, linear and nonlinear amplifiers, analog signal processors and power supplies. Hands-on experience, practical applications and projects. Teamwork, critical thinking and problem solving are emphasized. Prerequisite: Electronics Technology 2201 or equivalent, or consent of instructor (3 lecture hours, 4 lab hours)

Electronics Assembly Technology

ELECT 2205 - 3 Credits

Basic skills of assembly electronics technology, surface mount technology, techniques for electronic product assembly and manufacturing processes for electronics-based equipment and

products, and quality assurance in electronics. Hands-on experience, practical applications and projects. Teamwork, critical thinking and problem solving are emphasized. Prerequisite: Electronics Technology 1130 or equivalent, or consent of instructor (2 lecture hours, 2 lab hours)

Advanced Calculus for Electronics

ELECT 2210 - 2 Credits

A continuation of Calculus for Electronics. Principles of differential and integral calculus and differential equations applicable to circuit analysis. Prerequisite: Electronics Technology 1102 and Electronics Technology 1118 or equivalent, or consent of instructor (2 lecture hours)

Smart Grid Fundamentals

ELECT 2215 - 3 Credits

Course covers fundamentals of smart grid technology including basic functions, design criteria, tools, techniques, and technology need for building a smart grid. Electric power systems, power and control system engineering, and power electronics are integrated into the study of modeling and control of smart grid renewal energy systems. Prerequisite: Electronics Technology 1100, 1101, 1151 and 1201; all with a grade of C or better, or equivalent or consent of instructor (2 lecture hours, 2 lab hours)

Elect Instruments Measurements & Control

ELECT 2220 - 3 Credits

Methods of measurements of basic electric and electronic parameters. Study of circuits and characteristics of major electronic instruments. Basic control circuits. Prerequisite: Electronics Technology 1141 and Electronics Technology 1151 or equivalent, or consent of instructor (2 lecture hours, 2 lab hours)

Electronic Instruments, Measurements and

ELECT 2221 - 3 Credits

A continuation of the study of biomedical instrumentation. Students will learn how to inspect, repair, and maintain biomedical instrumentation and equipment. Internal electronic circuitry and typical clinical environments are discussed. Prerequisite: Electronics Technology 1221 with a grade of C or better, or equivalent or consent of instructor (2 lecture hours, 2 lab hours)

Digital Computer Electronics

ELECT 2231 - 4 Credits

Electronics Technology

Advanced concepts in digital computer electronics, computer architecture, computer circuit analysis and synthesis, computer organization, and microprocessor programming. Hands-on experience, practical applications, and projects. Teamwork, critical thinking and problem solving are emphasized. Prerequisites: Electronics Technology 1100 and Electronics Technology 1142 or equivalent, or consent of instructor (2 lecture hours, 6 lab hours)

Wireless Telecommunications 1

ELECT 2241 - 3 Credits

Basic concepts in wireless electronics and circuits. Fundamentals of wireless telecommunication systems, frequency spectrum, cellular radio, troubleshooting, and use of telecommunication test equipment. Hands-on experience, practical applications and projects. Teamwork, critical thinking and problem solving are emphasized. Prerequisite: Electronics Technology 1162 or consent of instructor (2 lecture hours, 2 lab hours)

Wireless Telecommunications 2

ELECT 2242 - 3 Credits

A continuation of Wireless Telecommunications I. Concepts in wireless electronics and wireless systems. Analysis of wireless telecommunication systems, personal telecommunication systems, and satellite and wireless networks. Hands-on experience, practical applications, and projects. Teamwork, critical thinking, and problem solving are emphasized. Prerequisite: Electronics Technology 2241 or consent of instructor (2 lecture hours, 2 lab hours)

Programmable Logic Devices

ELECT 2245 - 4 Credits

Introduction to digital systems programming. Field Programmable Gate Arrays (FPGA) and Complex Programmable Logical Devices (CPLD) are used in this course to develop sample applications. These state-of-the-art devices are programmed using the Verilog and VHDL (Very High Density Programming Language) languages, popular in science and industry today. Hands-on experience, practical applications and projects. Prerequisite: Electronics Technology 1141 or equivalent, or consent of instructor (2 lecture hours, 4 lab hours)

Industrial Controls

ELECT 2255 - 3 Credits

Introduction of basic concepts in industrial electronics. Topics include an overview of transducers and signal conditioning. Troubleshooting and use of test equipment. Principles and fundamental laws of control technology and industrial electronics are included. Prerequisites: Electronics

Technology 1141 and Electronics Technology 1151 or consent of instructor (2 lecture hours, 2 lab hours)

Digital Circuits and Systems

ELECT 2261 - 4 Credits

Introduction to basic concepts in digital circuits and systems, investigation of all phases of troubleshooting and implementation of reliable digital systems. Hands-on experience, practical applications and projects. Teamwork, critical thinking and problem solving are emphasized. Prerequisite: Electronics Technology 1141 or equivalent, or consent of instructor (2 lecture hours, 4 lab hours)

Introduction to Microprocessors

ELECT 2262 - 4 Credits

Introduction to basic concepts in microprocessor systems. Architecture of microprocessor systems, and investigation of all phases of troubleshooting and implementation of reliable microprocessor systems. Hands-on experience, practical applications and projects. Teamwork, critical thinking and problem solving are emphasized. Prerequisite: Electronics Technology 1101 and Electronics Technology 1141 or equivalent, or consent of instructor (2 lecture hours, 2 lab hours)

Embedded Systems & Microcntrlr Program

ELECT 2273 - 3 Credits

Introduction to embedded systems applications involving real-time programming of microcontrollers and digital to analog conversion. Hands-on experience includes programming Reduced Instruction Set Computing (RISC) microcontrollers, Field Programmable Gate Arrays (FPGA) circuits, and digital signal processing using Operation Amplifiers, Digital Signal Processing (DSP), and Phase Locked Loop (PLL) chips. Prerequisite: Electronics Technology 1141 with a grade of C or better or equivalent, or consent of instructor (2 lecture hours, 2 lab hours)

Internship (Career & Technical Ed)yCoop Ed/Internship Occup

ELECT 2860 - 1-4 Credits

Course requires participation in Career and Technical Education work experience with onsite supervision. Internship learning objectives are developed by student and faculty member, with approval of employer, to provide appropriate work-based learning experiences. Credit is earned by working a minimum of 75 clock hours per semester credit hour, up to a maximum of four credits. Prerequisite: 2.0 cumulative grade point average; 12 semester credits earned in a related field

of study; students work with Career Services staff to obtain approval of the internship by the Associate Dean from the academic discipline where the student is planning to earn credit.

Internship Advanced (Career & Tech Ed)

ELECT 2865 - 1-4 Credits

Continuation of Internship (Career and Technical Education). Course requires participation in Career & Technical Education work experience with onsite supervision. Internship learning objectives are developed by student and faculty member, with approval of employer, to provide appropriate work-based learning experiences. Credit is earned by working a minimum of 75 clock hours per semester credit hour, up to a maximum of four credits. Prerequisite: 2.0 cumulative grade point average; 12 semester credits earned in a related field of study; students work with Career Services staff to obtain approval of the internship by the Associate Dean from the academic discipline where the student is planning to earn credit.