

ELECTRONICS TECHNOLOGY (ETEC)

ETEC 105 - DC Circuit Analysis. 4 Credits.

Offered autumn and spring. Offered at Missoula College. M 090 or appropriate math-skills test score recommended prior to taking course. An introduction to direct current (DC) and analysis of series, parallel, and series-parallel circuits. Topics include electrical quantities, units of measurement, measurement instruments, resistors, current, voltage, power, energy, network theorems, equivalent circuits, magnetism, and electromagnetism. Laboratory experiments include circuit analysis; the proper use of measurement equipment and techniques; and troubleshooting.

ETEC 106 - AC Circuit Analysis. 3 Credits.

Offered autumn and spring. Offered at Missoula College. Analysis of alternating current (AC) circuits and the behavior of capacitors, inductors, reactance, impedance, transformers, and signal filters. Laboratory experiments include circuit analysis, the use of proper measurement equipment, and troubleshooting.

ETEC 113 - Circuits Lab. 1 Credit.

Offered autumn. Offered at Missoula College Prereq/Co-req., ETEC 105 and 106. Covers proper techniques of soldering and tool usage. Electronic technical language, hands on troubleshooting skills and basic electronic measurements are involved.

ETEC 120 - Electrician Fundamentals NCCER Level I with NCCER Core Curriculum. 4 Credits.

Students will learn the fundamentals of installing electrical systems in structures. These systems will include wiring, circuit breaker panels, switches, and light fixtures. Students will also learn to read and follow blueprints in accordance with the National Electrical Code as well as state and local codes. The course largely follows the first level of NCCER's 4-level Electrical curriculum that complies with DOL time-based standards for apprenticeship.

ETEC 191 - Special Topics. 1-6 Credits.

(R-6) Offered Intermittently. Offered at Missoula College. Experimental offerings of visiting professors, experimental offerings of new courses, or one-time offerings of current topics.

ETEC 213 - Power Systems Technology. 3 Credits.

Offered spring. Offered at Missoula College. Prereq., ETEC 106, M 121, Prereq/Co-req., M 122. A review of the principles of electricity, magnetism, and transformer action; the application of these principles in the operation of single-phase and three-phase ac/dc motors, alternators, and generators; and the control methods for these electrical devices.

ETEC 214 - Energy Storage and Dist.. 3 Credits.

Offered spring. Offered at Missoula College. Prereq. ETEC 106, NRGY 101, and M 121 or consent of instructor. Studies storage and transport methods of different types of energy. Explores emergent technologies and mechanisms designed to enhance efficiency and safety, including smart grid technologies; assesses relative social, economic and environmental merits of each type of energy system in terms of its storage and distribution.

ETEC 240 - Robotics. 3 Credits.

Offered spring. Offered at Missoula College. Prereq. or Co-req., ETEC 250. Explores physical and operating characteristics of a robot. Topics include robot configurations, power supplies, control systems, end effectors, sensors, stepper motors and stepper controls. Robot programming also is covered and a typical robot is programmed to perform repetitive actions. Includes hands-on labs.

ETEC 245 - Digital Electronics. 4 Credits.

Offered autumn. Offered at Missoula College. Prereq., ETEC 250. Explores digital electronic circuits and devices that make up a computer system. Topics include binary and hexadecimal number systems, Boolean algebra and digital logic theory, simple logic circuits, combinational logic, and sequential logic. Also covered is the analog-to-digital and digital-to-analog interfaces between a digital system and the real (analog) world. Includes hands-on labs.

ETEC 250 - Solid State Electronics I. 4 Credits.

Offered spring. Offered at Missoula College. Prereq. ETEC 105. An introduction to semiconductor technologies used in solid state electronics with an emphasis on diodes and transistors. Classroom concepts are reinforced through lab-based experiments.

ETEC 251 - Solid State Electronics II. 3 Credits.

Offered autumn. Offered at Missoula College. Prereq. ETEC 250. An introduction to semiconductor technologies used in solid state electronics with an emphasis on amplifier circuits, field effect transistors, thyristors, and operational amplifiers. Classroom concepts are reinforced through lab-based experiments.

ETEC 260 - Data and Network Communication. 3 Credits.

Offered autumn. Prereq., ETEC 250. Explores the principles, applications, and theory of data communication systems. Topics include communication concepts and terminology, analog and digital channel characteristics, signaling techniques for analog and digital data, communication codes, transmission media, and standards and protocols for various data communication systems including computer networks, and the public switched telephone network. Includes hands-on labs.

ETEC 265 - Control Systems. 4 Credits.

Offered autumn. Offered at Missoula College. Prereq., ETEC 250. The course provides a comprehensive coverage of components, circuits, instruments, and control techniques used in continuous and discrete automatic control systems, and focuses on basic principles, operation and applications. Programming, interfacing, and applications of programmable logic controllers are emphasized, including PLC hardware components, ladder logic diagram, fundamentals of PLC programming, and PLC interfacing and troubleshooting. Laboratory experiments and course projects are included in the course.

ETEC 270 - Wireless Communications. 4 Credits.

Offered autumn. Prereq., ETEC 250. Explores audio and radio frequency (RF) circuits. Topics include AM and FM signal modulation and demodulation, RF transmitters, RF receivers, RF amplifiers, audio amplifiers, oscillators, mixers, and antennas. Includes hands-on labs.

ETEC 275 - Microprocessors and Microcontrollers. 4 Credits.

Offered spring. Offered at Missoula College. Prereq., ETEC 250 and prereq/co-req., CSCI 113. The course introduces the fundamental concepts, basic principles of the architecture, organization, operation and applications of microprocessors and microcontrollers. Programming in assembly language and in C, and interfacing of microprocessor systems are emphasized. Laboratory experiments and course projects are included in the course to increase the hands-on skills of the students.

ETEC 291 - Special Topics. 1-6 Credits.

(R-6) Offered Intermittently. Offered at Missoula College. Experimental offerings of visiting professors, experimental offerings of new courses, or one-time offerings of current topics.

ETEC 292 - Independent Study. 1-6 Credits.

ETEC 295 - Special Topics. 1-6 Credits.

(R-6) Offered Intermittently. Offered at Missoula College. Experimental offerings of visiting professors, experimental offerings of new courses, or one-time offerings of current topics.

ETEC 298 - Internship. 2 Credits.

Offered intermittently. Offered at Missoula College. Consent of instructor required. Extended classroom experience providing practical application of classroom learning through on the job training in a student's field of study. This experience increases student skills, prepares them for initial employment, and increases occupational awareness and professionalism.

ETEC 299 - Electronics Capstone. 3 Credits.

Offered spring. Offered at Missoula College. Prereq., ETEC 275. Completion of project prototypes. Includes comprehensive final project from conception to market.