

ELECTRONICS TECHNOLOGY Course Description

ELEC 100 - Exploratory Electronics (3)

Pre-requisite: ENGL 100 or Instructor's permission. Co-requisite: MATH 100. This course introduces students with limited math and science backgrounds to basic electronic fundamentals. The course covers schematic reading, mathematics needed in the further study of electronics, elementary circuit analysis, soldering and interconnecting techniques. The course is primarily for preparatory students and is not a degree or certificate requirement.

ELEC 101A - Basic Electronics DC (3)

Pre-requisites: ENGL 100 and MATH 120. This course addresses the basic concepts essential for mastering the principles of electronics applicable to DC circuit analysis. The emphasis is on the basic physics of matter applicable to electronics, application of the fundamental laws of electronics to discrete electrical components, and the network theorems used in circuit analysis. The course provides a detailed description of how direct current (DC) functions in an electrical circuit.

ELEC 101L - Basic Electronics DC Lab (2)

Co-requisite: ELEC 101A and Pre-requisites: ENGL 100 and MATH 120. This course provides practical application of learned DC theory in a controlled lab setting.

ELEC 105A - Basic Electronics AC (3)

Pre-requisites: ELEC 101A, 101L. This course begins with the fundamental concepts learned in DC theory and lab and progresses through the principles of alternating current (AC), transformer applications, and capacitive/inductive filter circuits with emphasis on AC circuit analysis.

ELEC 105L - Basic Electronics AC Lab (2)

Pre-requisites: ELEC 101A, 101L; and Co-requisite: ELEC 105A. This course places emphasis on the lab analysis of sinusoidal waveforms and their applications in an AC electrical circuit.

ELEC 110A - Semiconductor Fundamentals (3)

Pre-requisites: ELEC 105A, 105L. This theory course provides the student with a background in solid-state electronic devices, starting with semiconductor physics, diode and transistor characteristics and applications, and progressing to operational amplifiers.

ELEC 110L - Semiconductor Fundamentals Lab (2)

Pre-requisites: ELEC 105A, 105L; and Co-requisite: ELEC 110A. This course provides practical application of learned semiconductor fundamentals theory, with emphasis on the development of troubleshooting skills for electronic circuits.

ELEC 118L – Electromechanical Control Devices (3)

Pre-requisites: ELEC 110A, 110L. This course covers the theory and application of mechanical devices and their electrical control circuits. Topics include hydraulics, pneumatics, AC and DC motors, stepper motors, mechanical drive systems and servomechanisms. Students develop skill in the assembly, operation, and troubleshooting of small-scale electromechanical and fluid power systems.

ELEC 201A - Digital Electronics (3)

Pre-requisite: MATH 120 or Instructor's permission. This course is a study of digital logic, its operations, principles and applications. The emphasis is on the analysis of number systems and codes, Boolean Algebra, TTL and CMOS circuit characteristics, followed by logic devices such as flip-flops, code converters, counters, multiplexers, and registers. The course concludes with an introduction to microprocessor interfacing circuits and techniques.

ELEC 202L - Digital Electronics Lab (2)

Pre-requisite: MATH 120 or Instructor's permission; and *Co-requisite:* ELEC 201A. The digital electronics lab provides direction and strategies on how to apply troubleshooting techniques. The applications include expansion from four-bit to multi-bit circuits to demonstrate adaptability of each logic device. The student will be working with converters, encoders, counters, and registers. An operational knowledge of these devices is essential to a better understanding of the functions and operations with logic devices applied to microprocessor circuits.

ELEC 205A - Microprocessors (3)

Pre-requisites: ELEC 201A, 202L or Instructor's permission. The emphasis in this course is on the development of skills needed to maintain and repair microprocessor based electronic equipment and systems. The theory covers fundamentals of microprocessor design and operating principles, including assembly language programming.

ELEC 206L - Microprocessors Lab (2)

Pre-requisites: ELEC 201A, 202L or Instructor's permission; and *Co-requisite:* ELEC 205A. This lab is designed to provide introductory experimentation in the Intel 80486 and later VLSI microprocessor architectures and interfacing to develop proficiency in the application of logical instructions, assembly language programming, problem solving, and I/O management.

ELEC 218L – Electromechanical Control Systems (3)

Pre-requisite: ELEC 118L. This course provides the student with hands-on experience using electromechanical systems similar to those utilized in the manufacturing industry, using schematics for analysis, maintenance procedures and developing troubleshooting skills.

ELEC 280 - Co-Op/OJT (3)

Pre-requisite: Successful completion of first year of electronics instruction with a minimum cumulative GPA as required by the industry internship partner. This course is used to provide the qualifying student with an internship or on-the-job training for gaining related experiences in the electronics industry at an approved industrial facility. This may be accomplished any time after the first year of training.