

ELCR – Electronics

ELCR 1005 - Soldering Technology 1.000 Credits

Develops the ability to solder and desolder connectors, components, and printed circuit boards using industry standards. Topics include safety practices, soldering, desoldering, anti-static grounding, and surface mount techniques.

ELCR 1010 - Direct Current Circuits 5.000 Credits Prerequisites: MATH 1013 (diploma) or MATH 1111 (degree)

This course provides instruction in the theory and practical application of simple and complex direct current circuitry. Topics include laboratory safety practices and procedures, electrical laws and principles, DC test equipment basic series, parallel and combination circuits, complex series and parallel circuits, and DC theorems.

ELCR 1020 - Alternating Current Circuits 7.000 Credits Prerequisites: ELCR 1010

This course introduces the theory and application of varying sine wave voltages and current, and continues the development of AC concepts with emphasis on constructing, verifying, and troubleshooting reactive circuits using RLC theory and practical application. Topics include AC wave generation, frequency and phase relationship, impedance, admittance, and conductance power factors, reactive components simple RLC circuits, AC circuit resonance, passive filters, and non-sinusoidal wave forms.

ELCR 1030 - Solid State Devices 5.000 Credits Prerequisites: ELCR 1020

This course provides instruction in the theory and application of solid state devices in the electronics industry. Emphasis is placed on the physical characteristics and uses of solid state devices. Topics include PN diodes, power supplies, voltage regulation, bipolar junction theory and application, field effect transistors, and special applications.

ELCR 1040 - Digital and Microprocessor Fundamentals 5.000 Credits Prerequisites: ELCR 1020

This course is designed to provide sufficient coverage of digital electronics and microprocessor fundamentals. Digital fundamentals will introduce basic topics such as binary arithmetic, logic gates and truth tables, Boolean algebra and minimization techniques, logic families, and digital test equipment. Upon completion of the foundational digital requirements, a more advanced study of digital devices and circuits will include such topics as flip-flops, counters, multiplexers and de-multiplexers, encoding and decoding, displays, and analog to digital and digital to analog conversions. Students will also explore the basic architecture and hardware concepts of the microprocessor.

ELCR 1060 - Linear Integrated Circuits 3.000 Credits Prerequisites: ELCR 1030

Provides in-depth instruction on the characteristics and applications of linear integrated circuits. Topics include operational amplifiers, timers, and three-terminal voltage regulators.

ELCR 1300 - Mobile Audio and Video Systems 3.000 Credits

Provides the fundamental concepts for the installation of automotive audio and video systems. Topics include charging and electrical systems, automotive wiring harnesses, basic audio systems, advanced audio systems, and mobile video systems.

ELCR 2110 - Process Control 3.000 Credits

Prerequisites: ELCR 1030
Introduces industrial process control applications with an emphasis on sensors and signal conditioning. Topics include symbology and drawing standards, control techniques, sensors and signal conditioning, and ISA and other relevant standards.

ELCR 2120 - Motor Controls 3.000 Credits

Prerequisites: ELCR 1030
Introduces the application of motor controls in the industrial environment. Topics include AC/DC motors, AC/DC drives, MCC and contractors, NEC and NEMA standards, ladder diagrams, and power sources.

ELCR 2130 - Programmable Controllers 3.000 Credits Prerequisites: ELCR 1030

Provides the basic skills and techniques used in industrial application of programmable controls. Topics include controller hardware, programming, PC applications, and troubleshooting.

ELCR 2140 - Mechanical Devices 2.000 Credits Prerequisites: Regular Status

Develops knowledge and skills necessary to transmit mechanical power using common industrial linkage types. Emphasis is placed on use of mechanical devices in combination with electronic controls. Topics include linkages, motion analysis, gear drives, and preventative maintenance.

ELCR 2150 - Fluid Power 2.000 Credits Prerequisites: Regular Status

Provides an overview of fluid power operation as applied to industrial electronics. Emphasis is placed on the interfacing of electronic and fluidic systems. Topics include safety, fluid dynamics, hydraulics, pneumatics, air logic, and electrical interfacing.

ELCR 2160 - Advanced Microprocessors and Robotics 3.000 Credits Prerequisites: ELCR 2130; ELCR 2140; ELCR 2150

This course continues an earlier study of microprocessor fundamentals and introduces robotic theory and application. Topics include the microprocessor instruction set, programming and debugging applications and troubleshooting, microprocessor applications for embedded systems, basic DSP concepts, robotic terminology and languages, and robotic programming.

ELCR 2590 - Fiber Optic Systems 3.000 Credits Prerequisites: ELCR 1040

Introduces the fundamentals of fiber optics and explores the applications of fiber optic transmission systems. Laboratory exercises give students hands-on experience with fiber optic devices and test equipment. Topics include fundamentals of fiber optics, types of optical fibers, fiber materials and manufacture, cabling, light sources/transmitters/receivers, connectors, splicing, test measurement, and fiber optic system design.

ELCR 2600 - Telecommunication and Data Cabling
3.000 Credits

Introduces the basic of cable installation from the initial site survey to splicing cable and making connections. Through laboratory activities, students perform the basic tasks of a cable installer. Topics include basic standards and practices, cable rating and performance, cable installation and management, testing and troubleshooting, industry standards, pulling cable, and understanding blueprints.

ELCR 2660 - Security System Installation and Testing
4.000 Credits

This course is designed to give students a working knowledge of basic security system applications and theory. Students will be able to identify system components and their uses and apply that knowledge to system design. The course utilizes hands-on training in system installation, programming, testing, and troubleshooting to assess the preparedness of the student in the security system installation and service industry.