Industrial Electronics

Industrial Electronics Degrees and Certificates

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- Aerospace Electronics
- Electronics

Industrial Electronics Classes

ELTRO 101: Basic DC-1

Fundamental theory, multi-meter usage, Ohm's Law, series and parallel circuits, voltage and current laws, series/ parallel combination circuits, DC motors, generators, semi-conductors, and instrumentation. A lab section provides hands-on exercises to reinforce principles and applications to test and troubleshoot circuits.

Credits 5 Weekly Contact Hours 7 Meets Degree Requirements For Restricted Elective Prerequisites MATH 93 or MATH 96 (98) or Instructor Permission

ELTRO 121: Digital Electronics

A comprehensive focus on the concepts, terminology, components and circuits that combine to form the basic digital electronic system. Includes digital number systems, gates, inverters, Boolean algebra, flip-flops, registers, timers and counters. Hands-on lab exercises include building logic gate circuits and working with 7400 series digital components. **Credits** 5

Weekly Contact Hours 7 Meets Degree Requirements For Restricted Elective Prerequisites ELEC 115 or ELEC 125 or ELTRO 101

ELTRO 132: Introduction to Computerized Controls and PLCs

Introduction to programmable logic controllers (PLCs). Includes practical lab work on industrial PLC controls. Basic ladder logic programming skills and installation methods will be introduced. Students experiment with a PLC controller/simulator and mechanically controlled systems with physical inputs and outputs to reinforce concepts. **Credits** 5 **Weekly Contact Hours** 7 **Meets Degree Requirements For** Restricted Elective **Prereguisites**

ELEC 115 or ELEC 125 or ELTRO 101 or ELTRO 121

ELTRO 196: Cooperative Work Experience

Designed to provide students with on-the-job practical field experience related to electrical and electronic industries. One credit is earned for each five hours of work experience per week. Prerequisites: instructor's permission.

Credits 1-5 Weekly Contact Hours 25 Meets Degree Requirements For Restricted Elective

ELTRO 202: Intro to National Electric Code (NEC)

Covers the current edition of the National Electric Code (NEC). Through classroom lecture and discussion, develops comprehension of the NEC sections and relevant industrial electronics and electricity applications. **Credits** 2 **Weekly Contact Hours** 2 **Meets Degree Requirements For** Restricted Elective

ELTRO 210: Introduction to Programming TAG Based Software for PLC's

Course focuses on initial development, design and implementation of TAG-Based programming ladder logic software and subroutines to perform industrial control processes and applications. Data organization, file management, relay instructions, comparisons, sequencers and PID control will be introduced and applied through hands-on exercises.

Credits 5 Weekly Contact Hours 7 Meets Degree Requirements For Restricted Elective Prerequisites ELTRO 132

ELTRO 213: Introduction to Graphic Interfacing PLCs

Programming and using graphics for touch-screen technology, and how to program symbolically for reusable ladder development. Includes use of software (C'More [™]) to create human machine interface (HMI/MMI) technologies, object-oriented animated graphics, and enhanced trending, alarming, derived tag creation and event detection.

Credits 5 Weekly Contact Hours 7 Meets Degree Requirements For Restricted Elective

ELTRO 220: Control Devices and Robotics

The theory of operation, calibration and troubleshooting of common control valves, actuators and robotic cells used in food processing and manufacturing. Credits 5 Weekly Contact Hours 7 Meets Degree Requirements For Restricted Elective Prerequisites ELTRO 132 or ELEC 125 or ELEC 135

ELTRO 221: Graphic Interface Programs for PLCs

Covers elements of drag-and-drop, relaxed editor, programming and using graphics for touch-screen technology, and how to program symbolically for reusable ladder development. Includes use of software to create human machine interface (HMI/MMI) technologies, object-oriented animated graphics, and enhanced trending, alarming, derived tag creation and event detection.

Credits 5 Weekly Contact Hours 7 Meets Degree Requirements For Restricted Elective Prerequisites ELTRO 210

ELTRO 223: Programming Software for Tag-Based PLCs

Focuses on the development, design and implementation of advanced programming ladder logic using tag-based data organization. Class focuses on the useful 'tag-naming' of PLC outputs, inputs and their use in PLC logic. Tag-naming enables students to construct PLC programs that are readable and understandable by tradespersons across industry.

Credits 5 Weekly Contact Hours 7 Meets Degree Requirements For Restricted Elective Prerequisites ELTRO 132

ELTRO 230: Programmable Logic Controller Networks

Introduces the many networks for online communications, including Serial, ControlNet, DeviceNet, Profibus and Ethernet networks. Also use network technology to multicast input devices, share data between controllers and control remote I/O.

Credits 5 Weekly Contact Hours 7 Meets Degree Requirements For Restricted Elective Prerequisites ELTRO 220

ELTRO 231: Troubleshooting Electronic PLC Control Systems

Learn procedures for isolating and safely correcting problems in an industrial electricity/electronics system. Includes editing, uploading, downloading, saving and restoring PLC programs, and interpreting basic ladder logic instructions. Hands-on practice uses actual electronic controls and PLC system workstations.

Credits 5 Weekly Contact Hours 7 Meets Degree Requirements For Restricted Elective Prerequisites ELTRO 210

ELTRO 240: Industrial Hydraulics & Pneumatics

Introduction to hydraulic and pneumatic systems, fluids, pumps, sensors, control devices, control valves, hydraulic cylinders, and receiver controllers. Includes system energy requirements, hydraulic and pneumatic logic, and the requirements and examples for interfacing into electronic Programmable Logic Controllers (PLC) automation controllers.

Credits 5 Weekly Contact Hours 6 Meets Degree Requirements For Restricted Elective

ELTRO 296: Cooperative Work Experience

Designed to provide students with additional on-the-job practical field experience related to electrical and electronic industries. One credit is earned for each five hours of work experience per week.

Credits 1-5 Weekly Contact Hours 25 Meets Degree Requirements For Restricted Elective

INDT 164: Plant Maintenance

An overview of the proper maintenance associated with industrial and commercial equipment. Both mechanical and electrical hands-on skills will be included. Students will study bearing and bearing failures, vibration analysis, thermal imaging, specific plant safety hazards and the monetary benefits of a well executed maintenance strategy.

Credits 5 Weekly Contact Hours 7 Meets Degree Requirements For Restricted Elective