

ELECTRICAL TECHNOLOGY (ELTR)

ELTR 1005 Safety

1.0 credit hours

15.0 Classroom Hours = 15.0 Lecture Hours

Deals with specifics on hazards in the workplace for electricians.

ELTR 1115 Direct Current Theory

4.0 credit hours

120.0 Classroom Hours = 30.0 Lecture Hours + 90.0 Lab Hours

Course of study includes concepts of electrical charges, characteristics of direct current, defines resistance, voltage amperage. It also introduces the student to Ohm's Law, series circuits, parallel circuits, series/parallel circuits, and electromagnetism. Prerequisites: ELTR 1005 and ELTR 1150,

ELTR 1130 Alt Current Theory

4.0 credit hours

120.0 Classroom Hours = 50.0 Lecture Hours + 70.0 Lab Hours

This course covers AC voltages, frequency, wave forms, inductors, capacitors, transformers, and three phase systems. Prerequisite:

ELTR 1115.

ELTR 1150 Applied Math

2.0 credit hours

30.0 Classroom Hours = 30.0 Lecture Hours

Mathematics required for understanding electrical circuits, including basic algebra, word problems, and power ratios.

ELTR 1200 Construction Wiring

9.5 credit hours

293.0 Classroom Hours = 68.0 Lecture Hours + 225.0 Lab Hours

Conduit bending, voltage drop, lighting, blueprint reading, transformers, conduit fill, conductor sizing and derating, NEC, short circuit calculations, and service calculations. Prerequisite: ELTR 1255. Fee \$50.

ELTR 1235 Electric Motor Control

8.0 credit hours

270.0 Classroom Hours = 45.0 Lecture Hours + 225.0 Lab Hours

Use of 2-wire and 3-wire control, pneumatic, solid state, and synchronous timers are covered. The drawing of ladder and wiring diagrams are also included. Includes the use of magnetic motor starters, control relays, and contactors. Prerequisites: ELTR 1200.

ELTR 1255 Residential Wiring

6.0 credit hours

210.0 Classroom Hours = 30.0 Lecture Hours + 180.0 Lab Hours

Residential wiring takes the student through every step in detail from designing the electrical installation to the final finished installation. The student will learn the National Electrical Code (NEC) sections dealing with residential wiring. Prerequisites: ELTR 1130.

ELTR 1370 Industrial Controls

8.0 credit hours

270.0 Classroom Hours = 45.0 Lecture Hours + 225.0 Lab Hours

In the current industry electricians are more and more exposed to PLC control and variable frequency drives. At first, these controls seem difficult to understand. This course is designed to teach you and help you understand them in an easy-to-understand way. Prerequisite: ELTR 1235.

ELTR 1380 Electrical Technology Internship

10.0 credit hours

600.0 Classroom Hours = 600.0 Lab Hours

Hands on experience working as an employee with an electrical contractor.

ELTR 1560 Advanced Construction Wiring

2.0 credit hours

60.0 Classroom Hours = 15.0 Lecture Hours + 45.0 Lab Hours

Advanced training for construction wiring. Prerequisites: ELTR 1200.

ELTR 1610 Electrical Theory and Safety

4.0 credit hours

105.0 Classroom Hours = 45.0 Lecture Hours + 60.0 Lab Hours

In this course the student will develop a general understanding of electrical safety and basic components of Electrical Theory, not limited to but including, Direct Current, Alternating Current, Ohm's Law, Kirchhoff's Law, Single Phase and Three Phase Power. Prerequisite: Permission of Instructor.

ELTR 1620 Electronics

4.0 credit hours

105.0 Classroom Hours = 45.0 Lecture Hours + 60.0 Lab Hours

In this course you will develop a knowledge of basic electrical components, along with how to use them, in a simple, electrical circuit. These components include: Resistors, Capacitors, Transformers, Diodes, Integrated Circuits (ICs), SCRs, Relays, Switches, and Transistors. Prerequisite: Instructor Permission.

ELTR 1630 Automation Control Networking

3.0 credit hours

45.0 Classroom Hours = 45.0 Lecture Hours

Automation Control Networking will introduce the three general categories of industrial networks: device networks, control networks, and information networks.

ELTR 1650 Schematics

1.0 credit hours

23.0 Classroom Hours = 15.0 Lecture Hours + 8.0 Lab Hours

In this course you will learn how to draw and interpret Basic, Intermediate, and Complex, Ladder and Wiring Diagrams. Along with hand drawing of schematics you will also be introduced to the world of Computer Aided Drafting software. Prerequisites: ELTR 1610, ELTR 1620 and ELTR 1630.

ELTR 1660 Motor Control

4.0 credit hours

105.0 Classroom Hours = 45.0 Lecture Hours + 60.0 Lab Hours

In this course you will develop a general knowledge of electric motor control fundamentals, wiring diagrams, ladder diagrams, AC Induction Motors, DC Motors, the basic components that make up the Motor, and the different motor control components, such as: Push-Buttons, Selector Switches, Overloads, Contactors, and Starters.

ELTR 1670 Programmable Logic Controllers I

4.0 credit hours

105.0 Classroom Hours = 45.0 Lecture Hours + 60.0 Lab Hours

In this course you will develop a general knowledge of electric motor control fundamentals, wiring diagrams, ladder diagrams, AC Induction Motors, DC Motors, the basic components that make up the Motor, and the different motor control components, such as: Push-Buttons, Selector Switches, Overloads, Contactors, and Starters. Prerequisites: ELTR 1610, ELTR 1620, and ELTR 1630.

ELTR 1690 Automation Control Internship

5.0 credit hours

300.0 Classroom Hours = 300.0 Lab Hours

Hands on experience working as an employee with electrical controls. Students should be afforded experiences that help them acquire technical knowledge and practical skills concerning electrical installations. Our goal is for the student to receive as much hands-on experience as possible. The electrical businesses will provide the student with as great a variety of various jobs-related work experiences as possible. Prerequisites: Instructor Permission.

ELTR 2620 Programmable Logic Controllers II

4.0 credit hours

105.0 Classroom Hours = 45.0 Lecture Hours + 60.0 Lab Hours

In this course you will work with Variable Frequency Drives, Rockwell PLCs, Siemens PLCs, Ethernet Switches, Wireless Routers, and Remote I/O blocks. When finished with this course you will be able to explain and demonstrate how all of these systems can work together to achieve a purpose in the Automation world. Prerequisites: ELTR 1650, ELTR 1660, and ELTR 1670.

ELTR 2630 Human Machine Interface I

2.0 credit hours

47.0 Classroom Hours = 23.0 Lecture Hours + 24.0 Lab Hours

In this course you will develop a general knowledge of Allen Bradley HMIs. You will learn how to install buttons, indicators, symbols, and pictures into the HMI using Rockwell FactoryTalk View Studio. Prerequisites: ELTR 1650, ELTR 1660, and ELTR 1670.

ELTR 2640 Motion Control

3.0 credit hours

75.0 Classroom Hours = 30.0 Lecture Hours + 45.0 Lab Hours

In this course you will develop an understanding of a Servo Motor, Stepper Motor, Resolver, Encoder, and how they work to achieve exact motor positioning. Prerequisites: ELTR 1650, ELTR 1660, and ELTR 1670.

ELTR 2670 Programmable Logic Controllers III

4.0 credit hours

105.0 Classroom Hours = 45.0 Lecture Hours + 60.0 Lab Hours

In this course you will work with both Allen Bradley PLCs and Siemens PLCs to explore the different programming methods under ISO. These methods include, but are not limited to, Structured Text, Structured Control Language (SCL), Sequential Function Chart, and Function Block. Prerequisites: ELTR 2620, ELTR 2630, ELTR 2640, and INFO 1160.

ELTR 2680 Human Machine Interface II

2.0 credit hours

47.0 Classroom Hours = 23.0 Lecture Hours + 24.0 Lab Hours

In this course you will build on the knowledge gained in Human Machine Interface I. You will dig deeper in the Allen Bradley HMI, and uncover various advanced settings and password protection features. You will also discover how to create basic buttons, indicators, symbols, and navigations of the Siemens HMI. Prerequisite(s): ELTR 2620, ELTR 2630, ELTR 2640, and INFO 1160

ELTR 2990 Special Topics:

3.0 credit hours

45.0 Classroom Hours = 45.0 Lecture Hours

Special topic course description upon request.