COURSES

PDF ELECTRICAL THEORY

ELM110 Basic Electricity .05-4 Credits
Prerequisite(s): None This course covers basic AC/DC circuit principles and practices. Students will explore areas of electrical and electronic circuits including: circuit theory, components, circuit construction and analysis, proper test equipment usage, troubleshooting methodology, and applications in various technical fields.

ELM112 Electrical Theory, DC 3 Credits
Prerequisite(s): None The study of matter, atomic structure, electron theory, source of electricity, and magnetism. Theory and shop application in Ohm's Law, voltage, current, resistance, and power in series, parallel, and series-parallel direct current circuits.

ELM121 Circuit Design 3 Credits
Prerequisite(s): Recommend ELM 110 or ELM 112 or concurrent enrollment Covers the basics of circuit design for automated systems. Integrates the use of elementary electrical and electronic devices as switches, relays, resistors, capacitors, inductors as well as sensors and filters.

ELM127 Introduction to AC Controls 3 Credits
Prerequisite(s): None Familiarizes students with critical electronic components in an industrial control setting. Control of electric motors is explored through the use of schematic symbols, diagrams, relay logic and solderless circuit boards. Students conduct laboratory experiments, building control circuits and learn troubleshooting methodologies.

ELM129 Electric Motors & Drives 3 Credits
Prerequisite(s): ELM 110 and Math proficiency are recommended An introduction to electric motor and variable frequency drives. Topics include how to connect, configure, adjust and operate variable frequency drives for motor operation.

ELM131 National Electric Code 3 Credits
Prerequisite(s): Must be admitted to an approved apprenticeship program. Survey of the National Electric Code (NEC) and its application to the safe installation of electrical conductors and equipment.

ELM134 Programmable Logic Controllers I 3 Credits
Prerequisite(s): ELM 127 Covers the fundamentals of digital logic and an introduction to programmable logic controllers (PLCs) in a complex mechatronic system. Students will learn the role PLCs play within a mechatronic system or subsystem; will explore basic elements of PLC functions by writing and testing programs to control them; identify malfunctioning PLCs, applying troubleshooting strategies to identify and localize problems caused by PLC hardware.

ELM136 Programmable Logic Controllers II 3 Credits
Prerequisite(s): ELM 134 A continuation of ELM 134. Provides intermediate level skills in Programmable Logic Control (PLC) programming instruction and control concepts. Explores the advanced elements of PLC functions by writing and testing programs to control them. Emphasis placed on programming structure, instructions, and execution. Utilize advanced simulation software to develop and execute various PLC programs. Apply troubleshooting strategies to identify and localize problems caused by PLC hardware.

ELM140 Industrial Robotics 3 Credits
Prerequisite(s): ELM 110 and Math proficiency are recommended An introductory course for industrial robotics. Students will learn how to safely test and operate various elements of industrial robotics.

ELM143 Wiring Techniques 2 Credits
Prerequisites(s): AIT 101 Introduces the concepts of industrial electrical. The course will describe the function of electrical prints, panels, the wiring between panels, and wire color coding. Students will be introduced to concepts in control system wiring fundamentals, wiring between and outside panels, panel wiring, wire bundling and experience a projetct in how to wire an electrical machine.

ELM198 SPECIAL TOPICS IN ELECTRICAL AND MECHANICAL TECHNOLOGY .5-4 Credits
Prerequisite(s): Must be admitted to an approved apprenticeship program. Basic understanding and hands-on experience of current theories in electrical and mechanical technologies as well as advanced technologies utilized in industry.