ELECTRICIAN

Diploma Program
9 months – 720 hours, 59 credit units

The commercial and residential electrical industries are constantly evolving as new industry demands require increased skill sets for electricians. Graduates need the necessary core and specialty skills to successfully meet electrician standards and be embraced by the marketplace. The Electrician diploma program teaches these skills by exploring the topics of electrical safety, tools and theory, the National Electrical Code (NEC), conduit bending, residential and commercial wiring, power distribution, advanced code concepts and motors, industrial controls, Programmable Logic Controllers (PLCs), personal development, jobsite management, fire and security alarms, voice, data, TV, signaling systems and fiber optics. Laboratory experience is an integral part of the program. Graduates of the Electrician diploma program are qualified for entry-level positions such as commercial and residential electrician, preventive maintenance electrician, production electrician, bench electrician, repair electrician, industrial maintenance electrician, programming electrician and maintenance technician. They are also qualified for positions as field service electricians and installation electricians in any manufacturing industry and market sector that has a need for electricians.
Upon successful completion of all program modules, students will be awarded a diploma.

Course Code, Course Title
EEV 1031 Electrical Theory 80 hours 8 credits
EEV 1176 NEC/Safety/Hand Tools and Conduit Bending 80 hours 6 credits
EEV 1174 Residential/Commercial and NEC Requirements 80 hours 6credits
EEV 1271 Transformer Principles and Test Equipment 80 hours 6 credits
EEV 1208 Power Distribution 80 hours 7credits
EEV 2193 Hazardous Locations & Renewable Energy 80 hours 7credits
EEV 2034 Motor Concepts 80 hours 7credits
EEV 2038 Advanced Industrial Controls 80 hours 6credits
EEV 2039 Solid State Controls and Industrial Automation 80 hours 6credits
Total 720 hours 59credits

EEV 1031 – Electrical Theory 8 Quarter Credits
This course introduces students to fundamentals of algebra, electrical theory, Ohm's Law, magnetism, voltage, resistance, inductance, capacitance, units of electrical measurement and basic electrical math. Students will learn concepts of energy, Kirchoff's law, Norton's and Thevenin's theorems, basic trigonometry, inductance, capacitance, series and parallel circuits, power and power factor, electrical efficiency, direct current (DC) and alternating current (AC) circuits, and personal development topics. Students will also learn techniques for studying and test-taking. Out-of-class activities will be assigned and assessed as part of this module. *Prerequisites: None.* Lecture Hours: 80 Lab hours: 0

EEV 1176 – NEC/Safety/Hand Tools and Conduit Bending 6 Quarter Credits
This course introduces students to definitions, terms and organization of the National Electrical Code (NEC), and conduit bending by calculation. Students will learn NEC requirements for residential, raceway types, boxes and fittings, commercial, industrial installations, materials, motorized tools, digging techniques, Material Safety Data Sheets (MSDS) and first aid. Students will develop math and layout techniques required to accurately and efficiently bend conduit. Students will also be introduced to the importance of safety, and common hand and power tools. Out-of-class activities will be assigned and assessed as part of this module. *Prerequisites: None.* Lecture Hours: 40 Lab hours: 40

EEV1174 – Residential/Commercial and NEC Requirements 6 Quarter Credits
This course introduces students to wiring and protection methods, conductor installation, raceway fill, ambient temperature, voltage drops, blueprint reading, electrical installation, connections, markings, enclosures, boxes and fittings, junction boxes, gutters, flexible cord, underground feeder and branch circuits, cables, supported and open wiring, residential/commercial wiring, signaling circuits, smoke detectors, ground fault circuit interrupters (GFCIs), doorbells, and service changes. Out-of-class activities will be assigned and assessed as part of this module. *Prerequisites: None.* Lecture Hours: 40 Lab hours: 40

EEV 1271 – Transformer Principles and Test Equipment 6 Quarter Credits
Students will learn about meters, test equipment, harmonics, grounding, single-phase, three-phase, auto and specialty transformer principles, cable and generator testing, measuring devices, high-voltage cables, insulators and test equipment. Out-of-class activities will be assigned and assessed as part of this module. *Prerequisites: EEV 1031.* Lecture Hours: 40 Lab hours: 40

EEV 1208 – Power Distribution 7 Quarter Credits
Students will learn about hazardous locations, health care facilities, intermediate and advanced grounding, overcurrent protection, load calculations, balancing phases and neutrals, surge arrestors, transient voltage surge suppression (TVSS), color codes, circuit identification, panel rating, phase converters, capacitors, and singlephase

and three-phase power distribution concepts. Out-of-class activities will be assigned and assessed as part of this module. *Prerequisites: EEV 1176.* Lecture Hours: 60 Lab hours: 20

EEV 2193 – Hazardous Locations & Renewable Energy 7 Quarter Credits

Students will learn about power conditioning and emergency systems, generators, battery systems, fan controllers, lighting concepts, uninterruptible power supply (UPS), transfer switches, dimmer systems, voice-data-TV, computer cabling, structured wiring, fiber optics, special equipment, fire alarms, security alarms, signaling, rigging, and renewable energy. Out-of-class activities will be assigned and assessed as part of this module. *Prerequisites: EEV 1174.* Lecture Hours: 60 Lab hours: 20

EEV2034 – Motor Concepts 7 Quarter Credits

This course introduces students to National Electrical Code (NEC) motor concepts, construction, rotor windings, starting configuration, megohmmeter, insulation testing, squirrel cage motor, single-phase and three-phase motors, AC/DC motor concepts, applications, mechanical clutches, magnetic drives, pulleys, direct drives, offset drives, and jobsite management. Out-of-class activities will be assigned and assessed as part of this module. *Prerequisites: EEV 1271.* Lecture Hours: 60 Lab hours: 20

EEV 2038 – Advanced Industrial Controls 6 Quarter Credits

Students will learn solid state relays, timing relays, variable frequency drives, programmable solid state relays, pneumatic timers, solid state motor control, dynamic braking, NFPA 79, control transformers, HVAC controls, and starting methods. Out-of-class activities will be assigned and assessed as part of this module. *Prerequisites: EEV 1271.* Lecture Hours: 40 Lab hours: 40

EEV 2039 – Solid State Controls and Industrial Automation 6 Quarter Credits

Students will learn solid state devices, semiconductors, digital logic, industrial automation, programmable logic controller (PLC), hardware, applications, HMI, binary, octal, hexadecimal, grey code and PLC operation. *Prerequisites: EEV 1271.* Lecture Hours: 40 Lab hours: 40