

# ELECTRICIAN (ELE)

## ELE 101 - Introduction to Electrical I

**Credit Hours: 3, Contact Hours: 4**

Division: Technical

This course will introduce the electrical student and/or the apprentice electrician to the electrical field through exploring basic electrical concepts. The student will explore career options in the electrical trade and learn about and practice OSHA construction and electrical safety rules, electrical theory, basic electrical circuits, test equipment, and the National Electrical Code. Group 2 course.

Required Prerequisite(s): CMT 100, may be taken concurrently

Recommended Prerequisite(s): Placement in MTH 111 or higher, or co-enrollment in the appropriate developmental Math course, and placement into ENG 11/111 or higher or co-enrollment in the appropriate developmental English course

## ELE 105 - Beg Residential Electrical

**Credit Hours: 3, Contact Hours: 4**

Division: Technical

Through structured classroom and hands-on skill building, the student will learn general information for electrical installations in the residential field to include: electrical symbols and outlets, determining the required number of lighting and receptacle outlets, conductor sizing and connections, switch control, bonding/grounding, ground-fault circuit interrupters and similar devices, and begin calculations for wiring various rooms in a common residential building. Group 2 course.

Required Prerequisite(s): ELE 101 or EET 103 or HVA 101, may be taken concurrently.

## ELE 107 - Introduction to Electrical II

**Credit Hours: 3, Contact Hours: 4**

Division: Technical

This course will introduce the electrical student and/or the apprentice electrician to the electrical field by exploring all basic electrical concepts in residential wiring. Concepts include properly sizing and installing electrical junction and device boxes, hand bending conduit, installing wireways, raceways, fittings, and fasteners, sizing conductors and cables, and reading electrical blueprints and construction documents. Participants will also apply code rules from the National Electrical Code. Completion of this course will result in a Level 1 National Center for Construction Education Research Credential. Group 2 course.

Required Prerequisite(s): ELE 101

## ELE 110 - Electrical Code Studies I

**Credit Hours: 3, Contact Hours: 3**

Division: Technical

This preparatory course reflects many of the important changes that appear in the current edition of the National Electrical Code. The changes are presented as they pertain to Single Family Dwellings, Multifamily Dwellings, Commercial Locations, Industrial Locations, and Hazardous Locations. It is designed to enable the student to learn electrical print reading and become familiar with applicable sections of the National Electrical Code. Group 2 course.

Required Prerequisite(s): ELE 105

Recommended Prerequisite(s): This course is recommended for those seeking more in-depth knowledge of the National Electrical Code and those who intend to sit for the Michigan Electrical Journeyman Exam with the next year

## ELE 111 - Electrical Code Studies II

**Credit Hours: 3, Contact Hours: 3**

This course will help the student in learning to read and interpret the meaning of the Code, and to find information about how to do wiring installations. Upon completion of this course, the student will be able to find information from the Code needed to do residential, commercial, farm, and industrial wiring and to be successful with electrical examinations. Group 2 course.

Required Prerequisite(s): ELE 110

Recommended Prerequisite(s): This course is recommended for those seeking more in-depth knowledge of the National Electrical Code and those who intend to sit for the Michigan Electrical Journeyman Exam with the next year

## ELE 121 - Adv Residential Electrical

**Credit Hours: 3, Contact Hours: 4**

Division: Technical

Through structured classroom and hands-on skill building, the student will learn advanced residential wiring techniques including: workshop circuits, special purpose outlets, gas and oil central heating systems, low-voltage wiring, alarms and security systems, service entrance equipment, overcurrent protection, service entrance calculations, swimming pools, home automation systems, and standby power systems. Group 2 course.

Required Prerequisite(s): ELE 105

## ELE 122 - Beginning Electrical Studies I

**Credit Hours: 3, Contact Hours: 4**

Division: Technical

This course will introduce the beginning electrical student and/or the apprentice electrician to new residential and commercial electrical concepts and reinforce concepts and skills learned in previous courses. Concepts include the science of electric lighting, learn about and practice mechanical conduit bending, sizing pull and junction boxes, installing conductors, and constructing and installing cable trays. Participants will also apply code rules from the National Electrical Code. Group 2 course.

Required Prerequisite(s): ELE 107

## ELE 125 - Pre-Commercial Electrical

**Credit Hours: 3, Contact Hours: 4**

Division: Technical

Through structured classroom and hands-on skill building, the student will learn small sources of electricity, basics of alternating current, AC circuits containing inductance, AC circuits containing capacitors, AC circuits containing resistance-inductance-capacitance, three-phase power, transformers, DC machines, and AC machines. Group 2 course.

Required Prerequisite(s): ELE 121

## ELE 126 - Beginning Electrical Studies II

**Credit Hours: 3, Contact Hours: 4**

Division: Technical

This course will introduce the beginning electrical student and/or the apprentice electrician to new residential and commercial electrical concepts and reinforce concepts and skills learned in previous courses. Concepts include motor theories, conductor terminations and splices, grounding and bonding, circuit breakers and fuses, control systems and fundamental concepts, and alternating current. Participants will also apply code rules from the National Electrical Code. Completion of this course will result in a Level 2 National Center for Construction Education Research Credential. Group 2 course.

Required Prerequisite(s): ELE 122

**ELE 131 - Commercial Electrical****Credit Hours: 3, Contact Hours: 4**

Division: Technical

Through structured classroom and hands-on skill building, the student will learn commercial building plans and specifications, reading electrical drawings, calculating the electrical load, branch circuits, wiring methods, motor and appliance circuits, feeders, special systems, and working drawings. Group 2 course.

Required Prerequisite(s): ELE 105

**ELE 132 - Intermediate Electrical Studies I****Credit Hours: 3, Contact Hours: 4**

Division: Technical

This course will introduce the intermediate electrical student and/or the apprentice electrician to new residential and commercial electrical concepts and reinforce concepts and skills learned in previous courses. Concepts include load calculations and branch feeder circuits, conductor selection and calculations, practical applications of lighting, hazardous locations, and overcurrent protection. Participants will also apply code rules from the National Electrical Code. Group 2 course.

Required Prerequisite(s): ELE 122

**ELE 135 - Adv Commercial Electrical****Credit Hours: 3, Contact Hours: 4**

Division: Technical

Through structured classroom and hands-on skill building, the student will learn special circuits, panelboards selection and installation, the electric service, lamps and ballasts for lighting, luminaires, emergency, standby and optional standby systems, overcurrent protection, short-circuit calculations, equipment and conductor short-circuit protection, low-voltage remote-control, and the cooling system. Group 2 course.

Required Prerequisite(s): ELE 131

**ELE 136 - Intermediate Electrical Studies II****Credit Hours: 3, Contact Hours: 4**

Division: Technical

This course will introduce the intermediate electrical student and/or the apprentice electrician to new residential and commercial electrical concepts and reinforce concepts and skills learned in previous courses. Concepts include distribution equipment, transformers, commercial electrical services, motor calculations, motor controls, and voice data and video. Participants will also apply code rules from the National Electrical Code. Completion of this course will result in a Level 3 National Center for Construction Education Research Credential. Group 2 course.

Required Prerequisite(s): ELE 132

**ELE 142 - Industrial Electrical****Credit Hours: 3, Contact Hours: 4**

Division: Technical

Through structured classroom and hands-on skill building, the student will learn plans and sitework, the unit substation, feeder bus system, panelboards, trolley busways, using wire tables, signaling systems, basic motor controls, motors and controllers, and motor installation. Group 2 course.

Required Prerequisite(s): ELE 105

**ELE 144 - Advanced Electrical Studies I****Credit Hours: 3, Contact Hours: 4**

Division: Technical

This course will introduce the advanced electrical student and/or the apprentice electrician to new residential and commercial electrical concepts and reinforce concepts and skills learned in previous courses. Concepts include load calculation feeders and services, health care facilities, standby and emergency systems, basic electronic theory, specialty transformers, and fire alarm systems. Participants will also apply code rules from the National Electrical Code. Group 2 course.

Required Prerequisite(s): ELE 136

**ELE 147 - Advanced Electrical Studies II****Credit Hours: 3, Contact Hours: 4**

Division: Technical

This course will introduce the advanced electrical student and/or the apprentice electrician to new residential and commercial electrical concepts and reinforce concepts and skills learned in previous courses. Concepts include advanced controls, HVAC controls, heat tracing and freeze protection, motor operation and maintenance, medium-voltage terminations/splices, special locations, and fundamentals of crew leadership. Participants will also apply code rules from the National Electrical Code. Completion of this course will result in a Level 4 National Center for Construction Education Research Credential. Group 2 course.

Required Prerequisite(s): ELE 144

**ELE 210 - Electrical Code Studies I****Credit Hours: 3, Contact Hours: 3**

Division: Technical

This course prepares students and/or the working apprentice electrician to take the State of Michigan Electrical Journeyman Examination. Concepts include the most up-to-date version of the National Electric Code as it pertains to definitions and requirements for electrical installations, wiring and protection, wiring methods and materials, and equipment for general use. Group 2 course.

Required Prerequisite(s): ELE 126

**ELE 220 - Electrical Code Studies II****Credit Hours: 3, Contact Hours: 3**

Division: Technical

This course prepares students and/or the working apprentice electrician to take the State of Michigan Electrical Journeyman Examination. Concepts include the most up-to-date version of the National Electric Code as it pertains to special occupancies, special equipment, special conditions and communications systems. Additional emphasis is placed on exam preparation. Group 2 course.

Required Prerequisite(s): ELE 210