

## Electrician – Industrial Electrician

### **Description**

The purpose of this training program is to provide students with the knowledge, skills, and hands-on training needed to begin a rewarding career in the electrical profession. The program teaches students how to install, maintain, and repair electrical systems in residential and commercial applications.

### **Program Learning Objectives**

1. Understand OHM's law and electrical conversions.
2. Understand DC Fundamentals
3. Ability to wire a basic switch and receptacle in a residential setting.
4. Ability to wire switches and receptacles in a commercial setting.
5. Dimension scaling and electrical symbols
6. Ability to size a solar panel to feed or supplement a house.
7. Ability to determine and distinguish safe work practices within the industrial work environment.
8. Sizing and load calculations of generators.
9. Sizing, bending, installing, and fittings of conduit.
10. Fundamentals of motor and light controls.

## Curriculum

Course #	Course Title	Lecture/ Lab Hours	Credit Hours	Clock Hours
LEAD 1003	Work Readiness	2/2	3	90
WKSF 1003	Industrial Workplace Safety	2/2	3	90
IJET 1012	Industrial Tools & Calculations	2/1	2	60
IMMT 1410	Basic Electricity	2/0	1	30
IMMT 1411	Basic Electricity Lab	2/2	3	90
ELEC 1131	Basic Electronics	1/3	3	105
<b>CTS –Electrician Helper - Level I</b>			<b>15</b>	<b>465</b>
ELEC 1204	Residential & Commercial Wiring I	3/3	4	135
ELEC 1230	National Electrical Code	2/2	3	90
ELEC 1214	Residential & Commercial Wiring II	3/3	4	135
IMMT 1120	Blueprint Reading	2/0	1	30
SOLR 1000	Solar Fundamentals	1/1	2	60
<b>CTS –Electrician Helper - Level II</b>			<b>29</b>	<b>915</b>
ELEC 2304	Industrial Wiring Theory & Practice	2/2	3	90
ELEC 1330	Generators/Motors and Transformer Operations	2/2	3	90
ELEC 1220	Electrical Raceway	2/1	2	60
IMMT 1430	Motor Controls	1/3	3	105
ELEC 1450	Variable Frequency Drives	0/2	2	60
ELEC 2620	Programmable Logic Controllers	2/2	3	90
<b>TD - Industrial Electrician</b>			<b>45</b>	<b>1410</b>

## Course Descriptions

### ***ELEC 1131 Basic Electronics***

Understand and demonstrate a basic understanding of electronics and how it applies to industrial wiring and electrical circuits.

### ***ELEC 1204 Residential & Commercial Wiring I***

An introduction to the identification and installation of the various types of conductors in residential and commercial wiring, connections, types of box enclosures, parts that make up a breaker panel, feeder service, switches, and receptacles.

### ***ELEC 1214 Residential and Commercial Wiring II***

An introduction to the identification and installation of the various types of conductors in residential and commercial wiring, connections, types of box enclosures, parts that make up a breaker panel, feeder service, switches, and receptacles. This course emphasizes circuit sizing, conduit sizing and code requirements.

***ELEC 1220 Electrical Raceway***

Course introduces various methods of installing MC cable, EMT, RMC, PVC, flexible, and surface raceways. Labs cover instruction in measuring, bending, cutting and installation of conduit.

***ELEC 1230 National Electrical Code***

Understand and demonstrate a certain level of knowledge of how to use and apply the National Electrical Code and why it is important to the industry.

***ELEC 1330 Generators/Motors and Transformer Operations***

This course includes the fundamentals and principles of single phase and three phase motors and generators and transformer theory, application, and characteristics.

***ELEC 1450 Variable Frequency Drives***

Understand and demonstrate the capacity to use a Variable Frequency Drive or Solar Panel Power system application.

***ELEC 2304 Industrial Wiring Theory & Practice***

Course provides students with an understanding of the basic principles of wiring and electrical system installation in the industrial sector of the electrical industry.

***ELEC 2620 Programmable Logic Controllers***

Understand and demonstrate the capacity to use a Programmable Logic Controller or Solar Panel Power system application.

***IJET 1012 Industrial Tools & Calculation***

This course is an introduction to the tools, mathematics, and measurements commonly used in the fields of Instrumentation and Industrial Electricity.

***IMMT 1410 Basic Electricity***

Students will know Ohms Law Kirchhoff Laws & Power Formulas and will be able to Calculate Voltage Current and Resistance in Series and Parallel Circuits- read Electrical Schematics, Hook up Single Pole, Double Pole, Three Way & Four Way Switches and Receptacles with Pigtails. Know the Formulas for Inductive Reactance and Capacitive Reactance. Understand how a Transformer works and Impedance Formulas.

***IMMT 1411 Basic Electricity Lab***

Students will know Ohms Law Kirchhoff Laws & Power Formulas and will be able to Calculate Voltage Current and Resistance in Series and Parallel Circuits- read Electrical Schematics, Hook up Single Pole, Double Pole, Three Way & Four Way Switches and Receptacles with Pigtails. Know the Formulas for Inductive Reactance and Capacitive Reactance. Understand how a Transformer works and Impedance Formulas.

***IMMT 1430 Motor Controls***

A study of AC motor controls designed to acquaint the student with the theory, diagnosis, and repair of various motor controllers and circuit components. Students will be involved in the construction of various controls circuits found in industry.

***LEAD 1003 Work Readiness***

This course is designed to prepare for job readiness by reviewing the skills necessary for employment, including time management, communication, teamwork, and professionalism. The student will engage in a variety of skill-building activities, create a resume, participate in a simulated interview process, and review basic math and English skills necessary for their chosen program of study.

***SOLR 1000 Solar Fundamentals***

Course provides fundamental knowledge of photovoltaic power, related componentry, and the application of solar power uses.

***WKSF 1003 Industrial Workplace Safety***

This course will provide an overview of the construction industry by examining organizational structures and systems, safety regulations and agencies, construction documents, office and field organizations, and the various construction crafts and trades. This course will focus on the basic knowledge and skills needed in the construction industry by studying safety, math, hand tools, power tools, rigging, blueprint reading, communication, and employability.