

# Basic Electrical

## Basic Electricity and Electronics

**Course Objective:** The student will become primarily acquainted with the behavior of electronics to gain a thorough understanding of electron theory. This knowledge is then applied to learning the operations of electrical equipment producing fundamental components, and using these components in working circuits.

**Who this is for:** Beginning students studying electricity.

Item Code	Lesson Description
EE.1	Behavior of electrons and controlling electron motion
EE.2	Electrical circuits, electrical energy and power
EE.3	Electric heating and lighting, electromagnetism
EE.4	Measuring instruments and electrical effects in fluids
EE.5	Induced voltages and electromagnetic generators
EE.6	Cells and batteries
EE.7	Small-scale sources of EMP and electric motors
EE.8	Alternating current
EE.9	Capacitors and their uses
EE.10	AC motors and rectifiers
EE.11	Amplifiers
EE.12	Electrical communication
EE.13	Solid state AC power control circuits

Item Code	Required Textbook
BKEE	<i>Introduction to Electricity and Electronics</i>

Item Code	Full Course Title (Includes Textbook)	Price
EE1FC	Basic Electricity and Electronics	\$332.50

Enrolled students may take individual lessons.  
Please contact student services for individual lesson and textbook pricing.

## Transformers

**Course Objective:** The student will be familiar with the basic electrical and magnetic principles as applied to transformers. They will also study core and shell-type construction as well as newer methods of building transformers, the principles of operation, and classification of transformers. Cooling methods, tap changers, transformer connections, auto transformers, and reactors, inspection and maintenance and the latest Safety Rules when working with transformers.

**Who this is for:** Apprentice, journeymen, and newcomers to the field who want a necessary background for understanding transformers.

Item Code	Lesson Description
TN.1A	Construction
TN.2A	Principles and classification
TN.3A	Circuitry and cooling
TN.4A	Tap changers
TN.5A	Connections
TN.6A	Special transformers
TN.7.A	Reactors
TN.8A	Maintenance

Item Code	Required Textbook
BKTN	<i>Transformers</i>

Item Code	Full Course Title (Includes Textbook)	Price
TN1AFC	Transformers	\$222.00

Enrolled students may take individual lessons.  
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# Basic Electrical

## Electrical Safety

**Course Objective:** The student will study the necessity for strict observance of safety rules in preventing accidents to employees and fellow workers and be more alert to unsafe condition(s) and to avoid unsafe act(s).

**Who this is for:** All employees.

Item Code	Lesson Description
ES.1E	Introduction, general rules
ES.2E	Health and environmental control, vehicle operations and work area protection
ES.3E	Overhead distribution and transmission
ES.4E	Tree trimming, underground lines and equipment and underground residential distribution
ES.5E	Electrical substation, construction maintenance and operation, generating stations, office safety, and first aid

Item Code	Required Textbook
BKES BK	<i>Safety Manual</i>

Item Code	Full Course Title (Includes Textbook)	Price
ES1EFC	Electrical Safety	\$138.60

Enrolled students may take individual lessons.  
Please contact student services for individual lesson and textbook pricing.

## Electronics

**Course Objective:** The student will gain a basic understanding of electric theory, the principle of how electronic tubes work and Federal Law as it pertains to license requirements. Booklet 2 provides more information on electronic tubes and their principle circuit while book 3 illustrates and describes practical electronic circuits.

**Who this is for:** Apprentices, electricians, maintenance personnel and others interested in different types of circuits and tubes pertaining to electronics.

Item Code	Lesson Description
CE.1	Introduction, electronic tubes, federal law
CE.2	Types of electronic tubes, tube markings
CE.3	Types of electronic circuits

\*A separate booklet is required for each lesson.

Item Code	Full Course Title (Includes Textbook)	Price
CE1FC	Electronics	\$87.00

Enrolled students may take individual lessons.  
Please contact student services for individual lesson and textbook pricing.

# ***Basic Electrical***

## **Brush and Commutator Maintenance**

**Course Objective:** Learn through pictures/diagrams with written explanations the how and why to proper brush and commutator cleaning, maintenance, repairs and inspection and the importance of these procedures.

**Who this is for:** Electricians, apprentices, shop workers, foremen and others responsible for the correct and proper maintenance of brush and commutators.

Item Code	Lesson Description
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BC.1	Brush and commutator maintenance
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Item Code	Required Textbook
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BKBC BK	<i>Brush and Commutator Maintenance</i>
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Item Code	Full Course Title (Includes Textbook)	Price
BC1FC	B rush and Commutator Maintenance	\$29.25

Enrolled students may take individual lessons.

## National Electrical Code & Blueprint Reading

**Course Objective:** The student is exposed to the latest revision of the NEC (National Electrical Code Blueprint Reading) and how it pertains to single-family dwellings, multi-family dwellings, commercial, industrial, and specialized and hazardous locations. National Electrical & Code Blueprint Reading is designed to enable the student to learn electrical blueprint reading and at the same time receive exposure to and become familiar with applicable sections of the current National Electrical Code.

**Who this is for:** Electrical inspectors, electricians, apprentices, technicians, drafters, designers, contractors and all persons interested in acquiring a knowledge of electrical installations which comply with the current National Electrical Code.

Item Code	Lesson Description
EC.1	Printreading
EC.2	One-family dwellings, introduction
EC.3	Multi-family dwellings
EC.4	Commercial locations
EC.5	Industrial locations
EC.6	Hazardous locations

Item Code	Required Textbook
BKEC BK	<i>National Electric Code Blueprint Reading</i>

Item Code	Full Course Title (Includes Textbook)	Price
EC1FC	National Electric Code and Blueprint Reading	\$176.00

Enrolled students may take individual lessons.  
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# ***Basic Electrical***

## **Lineman-Cableman's Training Basics**

**Course Objective:** The apprentice will gain a general understanding of electricity, electrical terms, from over-head and underground distribution and transmission lines to maintenance procedures as well as safety procedures.

**Who this is for:** Apprentices, linemen, cablemen, foremen, supervisors, and other employees of electric line construction, contractors and transmission and distribution departments of electric utility companies.

<b>Item Code</b>	<b>Lesson Description</b>
LE.50C	Elementary electrical principles
LE.51C	Elementary electrical principles
LE.52C	Electric systems, substations
LE.53C	Distribution circuits
LE.54C	Wood-pole structures, aluminum, concrete, fiberglass and steel structures
LE.55C	Line conductors
LE.56C	Distribution transformers
LE.57C	Lightning protection
LE.58C	Fuses and switches
LE.59C	Substations
LE.60C	Transmission circuits
LE.61C	Locating and staking line
LE.62C	Unloading, framing, and hauling wood poles
LE.63C	Erecting and setting poles
LE.64C	Guying poles
LE.65C	Transmission tower erection

*Course continued on facing page*

## Lineman-Cableman's Training Basics continued

Item Code	Lesson Description
LE.66C	Stringing line conductors
LE.67C	Distribution transformer installation
LE.68C	Joining line conductors, live-line maintenance with hot-line tools
LE.69C	Grounding, protective grounds
LE.70C	Street lighting
LE.71C	Voltage regulators
LE.72C	Use and care of pole climbing equipment
LE.73C	Underground system
LE.74C	Tree trimming and rope, knots, splices, and gear
LE.75C	Laying conduit and manhole construction
LE.76C	Pulling cable and splicing cable
LE.77C	Protective equipment
LE.78C	Underground residential distribution

Item Code	Required Textbook
BKLCH	<i>The Lineman's and Cableman's Handbook</i>

Item Code	Full Course Title (Includes Textbook)	Price
LE50CFC	Lineman-Cableman's Training Basics	\$727.95

Enrolled students may take individual lessons.  
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# ***Basic Electrical***

## **Electrical Motor Controls**

**Course Objective:** The student will gain a knowledge of various electrical motor controls, how to read them on blueprints, power distribution centers, preventive maintenance and trouble shooting and safety in working with electricity.

**Who this is for:** Electrical workers wanting to increase their knowledge of electrical motor controls.

**Prerequisite:** Knowledge of basic electricity.

<b>Item Code</b>	<b>Lesson Description</b>
MC.1	Electrical tools, instruments, and safety
MC.2	Industrial electrical symbols
MC.3	Introduction to logic as applied to circuits
MC.4	AC manual contactors and starters
MC.5	Magnetism and magnetic solenoids
MC.6	AC/DC contactors and magnetic motor starters
MC.7	Interpreting more complex line diagrams and control circuits with time-delay logic
MC.8	Applications and installation of control devices
MC.9	Reversing applied to single-phase, three-phase, and DC motor types
MC.10	Power distribution system transformers, switchboards, panelboards, motor control centers and busways
MC.11	Solid state electronic control devices

*Course continued on facing page*

## Electrical Motor Controls continued

Item Code	Lesson Description
MC.12	Electromechanical and solid state relays
MC.13	Photoelectric and proximity control and application
MC.14	Programmable controllers
MC.15	AC reduced voltage starters
MC.16	Accelerating and decelerating methods and circuits
MC.17	Preventive maintenance and troubleshooting techniques and applications
MC.18	Preventive maintenance and troubleshooting

Item Code	Required Textbook
BKEMC	<i>Electric Motor Controls (Automated Industrial Systems)</i>

Item Code	Full Course Title (Includes Textbook)	Price
MC1FC	Electrical Motor Controls	\$486.00

Enrolled students may take individual lessons.  
Please contact student services for individual lesson and textbook pricing.

# Basic Electrical

## Wiring Simplified (Expanded Course)

**Course Objective:** Install electrical wiring so the finished job will be both practical and safe according to National Electrical Code and will be acceptable to electrical inspectors, power suppliers and others having jurisdiction in the matter.

**Who this is for:** Beginners who are interested in learning basic electrical wiring.

Item Code	Lesson Description
FE.20	Study guide for electric wiring
FE.21	Measurement of electricity amperes, volts, watts, power costs, fluorescent lights
FE.22	Wire sizes and types
FE.23	Circuit breakers, fuses and circuits
FE.24	Wire colors, grounded neutral, service entrance
FE.25	Wiring systems
FE.26	Nonmetallic cable, armored cable, testing wiring
FE.27	Conduit, miscellaneous wiring, Greenfield
FE.28	Heavy appliance, installation of wiring devices, old wiring
FE.29	Modernization, grounds, motor wiring

Item Code	Required Textbook
BKFE BK	<i>Wiring Simplified</i>
	This book not available separately

Item Code	Full Course Title (Includes Textbook)	Price
FE20FC	Wiring Simplified (Expanded Course)	\$234.25

Enrolled students may take individual lessons.  
Please contact student services for individual lesson and textbook pricing.

## Wiring Simplified (Condensed Course)

**Course Objective:** Install electrical wiring so the finished job will be both practical and safe according to National Electrical Code and will be acceptable to electrical inspectors, power suppliers and others having jurisdiction in the matter.

**Who this is for:** Beginners who are interested in learning basic electrical wiring.

Item Code	Lesson Description
FE.30	Underwriters, National Electric Code, electrical installations
FE.31	Wire colors, grounded neutral, service entrance
FE.32	Wiring systems, nonmetallic cable, armored cable, testing wiring, conduit, miscellaneous wiring, Greenfield
FE.33	Modernization, grounds, motor wiring, heavy appliances, old wiring, installation of wiring devices

Item Code	Required Textbook
BKFE BK	<i>Wiring Simplified</i>
	This book not available separately

Item Code	Full Course Title (Includes Textbook)	Price
FE30FC	Wiring Simplified (Condensed Course)	\$102.25

Enrolled students may take individual lessons.  
Please contact student services for individual lesson and textbook pricing.