Accredited Electrical Program

RAYS ELECTRICAL SERVICE, LLC

Rays Electrical Service, LLC, has been in the Electrical business since 2008 and has proven teaching and mentoring strategies in the Electrical Trades. In 2019, the company became a Sponsor and Administrator of the NCCER Standardized Curricula that provides registered credentials to individuals who have successfully completed the required training program within a craft.

Some features of the NCCER Standardized Curricula are as follows:

- An industry-proven record of success
- Curricula developed by the industry, for the industry.
- National standardization providing portability of learned job skills an educational credit.
- Compliance with the Office of Apprenticeship requirements for related classroom training (CFR 29:29)
- Well-illustrated, up-to-date, and practical information

BENEFITS OF ACCREDITED CLASSROOM TRAINING PROGRAM

Rays Electrical Service is an Accredited Training Sponsor and Administrator of the NCCER and utilizes its standardized training and credentialing program for specific industries. The Electrical training course is approx. 144 hours of classroom and laboratory training annually. To successfully complete the NCCER Electrical Program, all four levels must be completed along with the Core Curriculum. Trainees receive transferable credentials issued by NCCER including transcripts, certificates and an initial wallet card that are tracked through the NCCER Registry System upon each module and level completion.

CLASS ENROLLMENT

Our classes are offered as an independent education course. We have two locations, one in Elgin and a 2nd training unit called Resmund Trade School in Maple Park Illinois. Classes levels begin in the Fall and run through May. Students will receive credit from NCCER for each module that they successfully pass which works towards a level completion. **The enrollment in our classes is not a guarantee of employment or apprenticeship.** It is recommended that students either during or after completion of Level 1 should be employed with a local electrical company for on-the-job learning/experience. To help support student employment, Rays will host a meet and greet with local employers to provide hiring opportunities to the students.

EQUAL EDUCATION OPPORTUNITY POLICY

Rays Electrical Service/Resmund Trade School is committed to providing equal education opportunities regardless of sex, race, color, religion, age, national origin, or disability and complies with all federal and state laws.

COURSE CANCELLATION – Rays Electrical Service/Resmund Trade school reserves the right to cancel in-person courses and provide an alternative remote method for classroom teaching. In person Lab or Hands-on training will need to be rescheduled. We reserve the right to cancel if minimum student registration is not met. Students will be notified, and all Deposits will be returned if full if the course is cancelled.

COURSE ATTENDANCE POLICY

Attendance/punctuality are vital to the success of any training and is a requirement for the course. Attendance records are monitored and accessible by the office. Please note excessive tardiness or unexcused absenteeism may result in dismissal from program.

REQUIREMENTS - STUDENT REGISTRATION for NCCER CLASSES

To register for a training program, applicants must be 16 years of age, perform 10-grade level math, and signature of acceptance of the student handbook. Please complete the Student Registration form & send by e-mail (lisa@rayselectrical.com) or set up an appt. time to meet in personal with Lisa. A non-refundable $500 deposit is required for ordering books and reserving a spot in the program.

ELECTRICAL LEVEL 1 CLASSES- 2022/2023 (This is the First year of a 4-year program)

*Level 1 Electrical includes the NCCER Core Curriculum: Introductory Craft Skills. The tuition of $3800 covers NCCER books for Core Curriculum and ELECTRICAL LEVEL 1 with on-line access to NCCER Connect & classroom teaching with required hands-on labs. Pricing for Level 2-4 will be provided on an annual basis, not to exceed $4,200 per year. Students will be required to provide their own basic hand tools, basic safety PPE and plan to purchase extra lab materials (ex. conduit, and fittings) for additional practice throughout the course.

Please contact Lisa for more information or to schedule an appointment at 847-214-2944.

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CORE Curriculum:

Title	Related Instruction Descriptions	Approx. Hours:
Basic Safety	Presents basic jobsite safety information to prepare workers for the construction environment. Describes the common causes of workplace incidents and accidents and how to avoid them. Introduces common PPE, including equipment required for work at height, and its proper use. Information related to safety in several specific environments, including welding areas and confined spaces, is also provided.	12.5
Introduction to Construction Math	Reviews basic math skills related to the construction trades and demonstrates how they apply to the trades. Covers multiple systems of measurement, decimals, fractions, and basic geometry	10
Introduction to Hand Tools	Introduces common hand tools used in a variety of construction crafts. Identifies tools and how to safely use them. Proper hand tool maintenance is also presented.	10
Introduction to Power Tools	Identifies and describes the operation of many power tools common in the construction environment. Provides instruction on proper use, as well as on safe-handling guidelines and basic maintenance.	10
Introduction to Construction Drawings	Introduces the basic elements of construction drawings. The common components of drawings are presented, as well as the most common drawing types. The use of drawing scales and how to measure drawings is also covered.	10
Introduction to Basic Rigging	Provides basic information related to rigging and rigging hardware, such as slings, rigging hitches, and hoists. Emphasizes safe working habits in the vicinity of rigging operations.	7.5
Basic Communication Skills	Provides good techniques for effective communication on the job. Includes examples that emphasize the importance of both written and verbal communication skills. Describes the importance of reading skills in the construction industry and covers proper techniques to use in a variety of different written communication formats.	7.5
Basic Employability Skills	Describes the opportunities offered by the construction trades. Discusses critical thinking and essential problem-solving skills for the construction industry. Also identifies and discusses positive social skills and their value in the workplace.	7.5
Introduction to Material Handling	Describes the hazards associated with handling materials and provides techniques to avoid both injury and property damage. Common material-handling equipment is also introduced.	10
	Total Core Curriculum Hours:	**72.5**

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Electrical 1:

Title	Related Instruction Descriptions	Approx. Hours:
Orientation to the Electrical Trade	Provides an overview of the electrical trade and discusses the career paths available to electricians.	2.5
Electrical Safety	Covers safety rules and regulations for electricians, including precautions for electrical hazards found on the job. Also covers the OSHA-mandated lockout/tagout procedure.	10
Introduction to Electrical Circuits	Introduces electrical concepts used in Ohm's law applied to DC series circuits. Covers atomic theory, electromotive force, resistance, and electric power equations.	7.5
Electrical Theory	Introduces series, parallel, and series parallel circuits. Covers resistive circuits, Kirchhoff's voltage and current laws, and circuit analysis.	7.5
Introduction to the National Electrical Code®	Provides a road map for using the NEC®. Introduces the layout and the types of information found within the code book. Allows trainees to practice finding information using an easy-to-follow procedure.	7.5
Device Boxes	Covers the hardware and systems used by an electrician to mount and support boxes, receptacles, and other electrical components. Also covers NEC® fill and pull requirements for device, pull, and junction boxes under 100 cubic inches.	10
Hand Bending	Introduces conduit bending and installation. Covers the techniques for using hand-operated and step conduit benders, as well as cutting, reaming, and threading conduit.	10
Raceways and Fittings	Introduces the types and applications of raceways, wireways, and ducts. Stresses the applicable NEC® requirements.	20
Conductors and Cables	Focuses on the types and applications of conductors and covers proper wiring techniques. Stresses the applicable NEC® requirements.	10
Basic Electrical Construction Drawings	Describes electrical prints, drawings, and symbols, and the types of information that can be found on schematics, one-lines, and wiring diagrams.	7.5
Residential Electrical Services	Covers the electrical devices and wiring techniques common to residential construction and maintenance. Allows trainees to practice making service calculations. Stresses the applicable NEC® requirements.	15
Electrical Test Equipment	Covers proper selection, inspection, and use of common electrical test equipment, including voltage testers, clamp-on ammeters, ohmmeters, multimeters, phase/motor rotation testers, and data recording equipment. Also covers safety precautions and meter category ratings.	5
	Total Electrical 1 Curriculum Hours:	**107.5**

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Electrical Level 2

Title	Related Instruction Descriptions	Approx. Hours:
Alternating Current	Describes forces that are characteristic of alternating-current systems and the application of Ohm's law to AC circuits.	17.5
Motors: Theory and Application	Covers AC and DC motors, including the main components, circuits, and connections.	20
Electric Lighting	Introduces principles of human vision and the characteristics of light. Focuses on the handling and installation of various types of lamps and lighting fixtures.	15
Conduit Bending	Covers bends in conduit up to 6 inches. Focuses on mechanical, hydraulic, and electrical benders.	15
Pull and Junction Boxes	Explains how to select and size pull boxes, junction boxes, and handholes.	12.5
Conductor Installations	Covers the transportation, storage, and setup of cable reels; methods of rigging; and procedures for complete cable pulls in raceways and cable trays.	10
Cable Tray	Focuses on NEC® installation requirements for cable tray, including cable installations.	7.5
Conductor Terminations and Splices	Describes methods of terminating and splicing conductors, including preparing and taping conductors.	7.5
Grounding and Bonding	Focuses on the purpose of grounding and bonding electrical systems. Thoroughly covers NEC® requirements.	15
Circuit Breakers and Fuses	Describes fuses and circuit breakers along with their practical applications. Also covers sizing.	12.5
Control Systems and Fundamental Concepts	Gives basic descriptions of various types of contactors and relays along with their practical applications	12.5
	Total	**145**

Electrical Level 3

Title	Related Instruction Descriptions	Approx. Hours:
Load Calculations: Branch and Feeder Circuits	Explains how to calculate branch circuit and feeder loads for residential and commercial applications.	17.5
Conductor Selection and Calculations	Covers the factors involved in conductor selection, including insulation types, current-carrying capacity, temperature ratings, and voltage drop.	15
Practical Applications of Lighting	Describes specific types of incandescent, fluorescent, and HID lamps, as well as ballasts. Also covers troubleshooting and various types of lighting controls.	12.5
Hazardous Locations	Presents the NEC® requirements for equipment installed in hazardous locations.	15
Overcurrent Protection	Explains how to size and select circuit breakers and fuses for various applications. Also covers short circuit calculations and troubleshooting.	25

Distribution Equipment	Discusses switchboards and switchgear, including installation, grounding, and maintenance requirements. Includes a set of drawings.	12.5
Transformers	Discusses transformer types, construction, connections, protection, and grounding.	12.5
Commercial Electrical Services	Covers the components, installation considerations, and NEC® requirements for commercial services.	10
Motor Calculations	Covers calculations required to size conductors and overcurrent protection for motor applications.	12.5
Voice, Data, and Video	Covers installation, termination, and testing of voice, data, and video cabling systems.	10
Motor Controls	Provides information on selecting, sizing, and installing motor controllers. Also covers control circuit pilot devices and basic relay logic.	12.5
	Total	**155**

Electrical Level 4

Load Calculations: Feeders and Services	Topics include basic calculation procedures for commercial and residential applications.	20
Health Care Facilities	Covers the installation of electric circuits in health care facilities, including the requirements for life safety and critical circuits.	10
Standby and Emergency Systems	Explains the NEC® requirements for electric generators and storage batteries.	10
Basic Electronic Theory	Explains the function and operation of basic electronic devices, including semiconductors, diodes, rectifiers, and transistors.	10
Fire Alarm Systems	Covers fire alarm control units, Digital Alarm Communicator Systems (DACS), wiring for alarm initiating and notification devices, and alarm system maintenance.	15
Specialty Transformers	Covers various types of transformers and their applications. Also provides information on selecting, sizing, and installing these devices.	10
Advanced Controls	Discusses applications and operating principles of solid-state controls, reduced-voltage starters, and adjustable frequency drives. Also covers basic troubleshooting procedures.	20
HVAC Controls	Provides a basic overview of HVAC systems and their controls. Also covers electrical troubleshooting and NEC® requirements.	15
Heat Tracing and Freeze Protection	Covers heat tracing systems along with their applications and installation requirements.	10
Motor Operation and Maintenance	Covers motor cleaning, testing, and preventive maintenance. Also describes basic troubleshooting procedures.	10
Medium-Voltage Terminations/Splices	Offers an overview of the NEC® and cable manufacturers' requirements for medium-voltage terminations and splices.	10
Special Locations	Describes NEC® requirements for selecting and installing equipment, enclosures, and devices in special locations including places of assembly, theaters, carnivals, agricultural buildings, marinas, temporary installations, wired partitions, and swimming pools.	20
Fundamentals of Crew Leadership		20
	Total	**180**