Electrician Apprenticeship – Commercial & Residential

Did you know? *

- Job opportunities should be very good, especially for those with the broadest range of skills.
- Most electricians acquire their skills by completing an apprenticeship program lasting 4 to 5 years.
- About 4 out of 5 electricians work in the construction industry or are self-employed, but there also will be opportunities for electricians in other industries.

*Statistics retrieved from the U.S. Bureau of Labor Statistics.

What Does a Construction Electrician Do?

Electricians plan, diagram, install, and repair electrical fixtures, apparatus, and control equipment such as switches, relays, and circuit breaker panels. They measure, cut, bend, thread, assemble, and install electrical conduit (pipe or tubing), and pull wire through conduit. They test continuity of circuits to ensure compatibility and safety of components, using instruments; such as the ohmmeter, megger, and other testing equipment.

Electricians assemble, install, and wire electrical systems that operate heating, lighting, power, air conditioning, and refrigeration components; electrical machinery; electronic equipment and controls; and signal and communication systems.

For safety, electricians must also become familiar with the National Electrical Code, designed to protect persons and property from hazards arising from the use of electricity.

Tasks:

- Proficiency with Conduit- 1.5" and smaller, 2" and larger, thin wall, rigid, flexible, sealtite, aluminum, plastic.
- Proficiency with other raceways- under floor duct, cable tray, square duct, crane rails and distribution bus duct.
- Distribution equipment- 600 volts and over, to include the termination and/or splicing or high voltage cable. Installation and connecting of cubicles, transformers, switch gear, etc. Under 600 volts, service panels, sub 400 panels, fuse panels, and transformers.
- Machinery Installation- setting and aligning motors, kitchen, laundry equipment, aid equipment.
- Installation of wires and cables- wire, cables, nonmetallic sheathed cable, armored cable, in conduit, trays, duct, racks, wire mold, etc., and fabricating and rigging.
- Installation of finish materials and trim devices- assemble and install fixtures, switches, receptacles, electric heating equipment (e.g. baseboard heaters, valance heaters, radiant heaters, etc.)
- Installing and wiring control equipment- motor control equipment relays, thermostats, indicators, tach generators, motion switches, process controls, limit switches, counters, timers, selsyn motors, instruments, electronic speed controls, humidity controls micro switches, voltage controls, current controls, static controls and air conditioning equipment.
- Specialized wiring of specialized systems to include- sound systems, CRT and data systems, telephones, fire alarm systems, fiber optics, energy management systems, nurse call systems, closed circuit tv, and street and highway lighting.
- Supporting tasks, including- trenching, cleanup, handling of material, and stock room.
- Assemble, install, test, and maintain electrical or electronic wiring, equipment, appliances, apparatus, and fixtures, using hand tools and power tools.
- Diagnose malfunctioning systems, apparatus, and components, using test equipment and hand tools, to locate the cause of a breakdown and correct the problem.
- Connect wires to circuit breakers, transformers, or other components.
- Inspect electrical systems, equipment, and components to identify hazards, defects, and the need for adjustment or repair, and to ensure compliance with codes.
- Test electrical systems and continuity of circuits in electrical wiring, equipment, and fixtures, using testing devices such as ohmmeters, voltmeters, and oscilloscopes, to ensure compatibility and safety of the system.
- Plan layout and installation of electrical wiring, equipment and fixtures, based on specifications and codes.
- Direct and train workers to install, maintain, or repair electrical wiring, equipment, and fixtures.
- Prepare sketches or follow blueprints to determine the location of wiring and equipment and to ensure conformance to building and safety codes.
- Able to lift 21-50 lbs regularly.

What Are the Working Conditions?

Electrical work can be indoors or outdoors. The work is sometimes physically strenuous, requiring prolonged standing in cramped or uncomfortable positions often working with hands over head. Electricians may work in a wide variety of environments from clean and comfortable to dusty, dirty, hot and wet conditions, or in confined areas, ditches or other uncomfortable spaces. The work environment varies with each job and may include working on ladders and scaffolding. Electricians follow strict safety procedures to prevent injuries from electrical shock, falls and cuts.

How is the Training Structured?

- 4 year training program
- 8,000 hours on-the-job training
- 144 hours of related instruction per year
- Individual program requirements may vary by sponsor

What are the Application Requirements?

- Applicants must be at least 18 years of age
- High school diploma or equivalent
- Physically able to perform trade
- Valid driver's license and reliable transportation

What Skills Should I Possess?

- **Building and Construction**- Knowledge of materials, methods, and the tools involved in the construction or repair of houses, buildings, or other structures.
- **Mathematics**- Knowledge of arithmetic, algebra, geometry, and their applications.
- **Mechanical**- Knowledge of machines and tools, both hand and power, and their use.
- **Public Safety and Security**- Knowledge of specific safety and health standards issued by federal, state, and local authorities, specially Occupational Safety and Health Administration (OSHA) along with employers' rules for health and safety of employees.
- **Installation**- Installing equipment, machines, wiring, rigging or programming to meet specifications.
- **Equipment Selection**- Determining the kind of tools and equipment needed to do a job or task.
- **Critical Thinking/Troubleshooting**- Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems and situations. Use of logic helps to determine the step by step process, to calculate electrical systems and equipment, planning, and installation.
- **Judgment and Decision Making**- Considering the relative costs and benefits of potential actions to choose the most appropriate solution to the task assigned.
- **Reading Comprehension**- Understanding written sentences, paragraphs, and symbols in work related documents.
- **Repairing and Maintaining Equipment**- Servicing, repairing, adjusting, and testing machines, devices, moving parts, and tools.
- **Work Ethic**- Ability to get to work and school on a timely and consistent basis and must be self-directed with a good attitude. Ability to work smoothly with others as a team to complete a task.
- **Time Management**- Ability to be self motivated, responsible, dependable and work independently without close supervision.
- **Coordination**- The ability to coordinate two or more limbs (for example, two arms, two legs, or one leg and one arm) while sitting, standing, or lying down. The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.
- **Reasoning**- The ability to apply general rules to specific problems to produce solutions that are logical.
- **Vision**- The ability to see details and distinguish colors at close range (a few inches or a few feet from the observer) and at a variety of distances and lighting conditions.
- **Communication Skills**- The ability to read and understand all written materials, verbal instructions, and warnings. The ability to communicate ideas and instructions while speaking so others will understand.

Additional Resources

The United States Bureau of Labor Statistics maintains information on all occupations. For more information on the Construction Electrician trade in the United States, visit:

http://www.bls.gov/ooh/construction-and-extraction/electricians.htm

Who to Contact in Mississippi

For more information on becoming an Electrician contact MCEF at 601-605-2989.