



## Electrician Apprenticeship Job Description

### Job Summary:

An apprentice electrician is an entry-level electrical trainee enrolled in an apprenticeship program to learn the concepts and skills necessary to become a certified electrician. As an apprentice, an electrician will receive a combination of classroom education and paid on-the-job experience. Skills that are typically covered in these programs include how to design, install and repair commercial or residential electrical systems, as well as how to install and maintain data-telecommunications wiring.

Apprentice electricians work under the observation of a journey-level electrician, building basic skills and gaining additional tasks and responsibilities as they improve.

Electricians work with blueprints when they install electrical systems in factories, office buildings, homes, and other structures. Blueprints indicate the locations of lighting fixtures, power distribution equipment such as transformers and switchboards, outlets, load centers, panel boards, and other equipment. Blueprints also indicate how the structure or facility is circuited. Electricians must follow the National Electric Code and comply with State and local building codes when they install these systems

In most commercial, industrial and institutional facilities, they place conduit (pipe or tubing) inside designated partitions, walls, or other concealed areas. They also surface mount these conduits and install PVC or rigid steel conduit underground in trenches. They install various sizes of metal boxes that will enclose electrical switches and outlets. They then pull insulated wires or cables through the conduit to complete circuits between these boxes. In lighter construction, such as residential and light commercial, plastic-covered wire or metal clad cable usually is used instead of conduit.

Regardless of the type of wire used, electricians connect it to circuit breakers, transformers, or other components. They join the wires in boxes with various specially designed connectors. After they finish the wiring, they use testing equipment, such as ohmmeters, voltmeters and ammeters to check the circuits for proper connections, ensuring electrical compatibility and safety of components.

In addition to wiring a building's electrical system, electricians may install coaxial or fiber optic cable for computers and other telecommunications equipment. A growing number of electricians install telephone systems, computer wiring and equipment, street lights, intercom systems, and fire alarm and security systems. They also may connect motors to electrical power and install electronic controls for industrial equipment.

Maintenance work varies greatly, depending on where the electrician is employed. Electricians who specialize in residential work may rewire a home and replace an old fuse box with a new electrical service to accommodate additional appliances. Those who work in large factories may repair motors, transformers, generators, and electronic controllers on machine tools and industrial robots. Those in office buildings and small plants may repair all types of electrical equipment.

An apprentice electrician may work installing underground utilities that include digging ditches, operating large jackhammers, compaction equipment and working with heavy equipment operators such as backhoes, and concrete truck drivers.

Electricians work in both extreme hot and cold conditions, inside and outside.

**Essential Functions Include but are not limited to:**

- Measure, cut, and bend wire and conduit, using measuring instruments and hand tools.
- Maintain tools, vehicles, and equipment and keep parts and supplies in order.
- Perform semi-skilled and unskilled laboring duties related to the installation, maintenance and repair of a wide variety of electrical systems and equipment.
- Disassemble defective electrical equipment, replace defective or worn parts, and reassemble equipment, using hand tools.
- Thread conduit ends, connect couplings, and fabricate and secure conduit support brackets, using hand tools.
- Examine electrical units for loose connections and broken insulation and tighten connections, using hand tools.
- Drill holes and pull or push wiring through openings, using hand and power tools.
- Clean work area and wash parts.
- Dig trenches or holes for installation of conduit or supports.
- Strip insulation from wire ends, using wire stripping pliers, and attach wires to terminals for subsequent soldering.
- Trace out short circuits in wiring, using test meter.
- Install copper-clad ground rods, using a manual post driver.
- Break up concrete, using airhammer, to facilitate installation, construction, or repair of equipment.
- Erect electrical system components and barricades, and rig scaffolds, hoists, and shoring.
- Transport tools, materials, equipment, and supplies to work site by hand, handtruck, or heavy, motorized truck.
- Construct controllers and panels, using power drills, drill presses, taps, saws and punches.
- Raise, lower, or position equipment, tools, and materials, using hoist, hand line, or block and tackle.
- Requisition materials, using warehouse requisition or release forms.

**Knowledge, Skill and Experience:**

**Minimum Requirements:**

- At least 18 years of age or older
- High School Diploma, GED or Equivalency
- Able to Pass Basic Algebra Test, Color Perception Test and Drug Screen.

**Minimum Experience Required:**

None

**Skills Required:**

An apprentice electrician must have a high mechanical aptitude and be good with his or her hands. He or she must be able to follow direction, as most jobs begin with a blueprint that details where electrical devices need to be installed. He or she also needs to know where to look for issues and be a capable problem solver. He/She should be organized, analytical and provide the necessary strength and stamina for a job that involves occasional heavy lifting and flexibility. On top of those things, apprentices need to be able to act on the instructions from a supervisor and work well alone or as members of a team.

**Physical Job Description**

<b>Job Title:</b>	Electrician Apprentice
<b>Typical Working Conditions:</b> (Describe environment including exposure to heat, cold, fumes, chemicals, allergens, mold, etc.)	Electricians' work is often strenuous. They may stand for long periods and frequently work on ladders and scaffolds. Their working environment varies, depending on the type of job. Some may work in dusty, dirty, hot, or wet conditions, or in confined areas, ditches, or other uncomfortable places. Electricians risk injury from electrical shock, falls, and cuts; to avoid injuries, they must follow strict safety procedures. Some electricians may have to travel to jobsites, which may be up to 100 miles away.
<b>Equipment Used:</b> (List all manual and automated equipment used in the course of performing essential functions.)	Electricians use handtools such as screwdrivers, pliers, knives, and saws. They also use power tools such as band saws, sawzalls and drills and testing equipment such as voltmeters, ammeters and ohmmeters.
<b>Essential Physical Tasks:</b> (List all physical tasks encountered in performing	Identifying and separating wires by color. Digging trenches and working in trenches. Breaking concrete with jackhammer or other tools. Assisting in the moving,

essential functions.)

positioning and fastening of heavy electrical equipment. Lifting, positioning and fastening objects such as light fixtures, wire, conduit, junction boxes, motors and other equipment. Carrying material and tools from location to location or floor to floor. Working from A-Frames, extension ladders and scaffolds at various heights. Crawling under floors and working in attics where space is limited. Working under hot and cold weather conditions, indoors and outdoors. Lifting and working with tools and equipment above head.

## Analysis of Physical Demands

**Key** (Based on typical week):

**N**=Never

**R**=Rarely (Less than 1 hour per week)

**O**=Occasional (1%-33% of time)

**F**=Frequent (34%-66% of time)

**C**=Constant (over 66% of time)

Activity	Frequency					Activity	Frequency				
	N	R	O	F	C		N	R	O	F	C
<b><i>Lifting/Carrying</i></b>					X	<b><i>Twisting/Turning</i></b>					
Under 10 lbs					X	Reach over shoulder					X
11-20 lbs					X	Reach over head					X
21-50 lbs				X		Reach outward					X
51-100 lbs			X			Climb				X	
Over 100 lbs						Crawl			X		
						Kneel				X	
<b><i>Pushing/Pulling</i></b>						Squat				X	
Under 10 lbs					X	Sit		X			
11-20 lbs					X	Walk-Normal Surfaces				X	
21-50 lbs				X		Walk-Uneven Surfaces				X	
51-100 lbs			X			Walk-Slippery Surfaces				X	
Over 100 lbs			X			Stand					X
						Bend					X
<b><i>Driving</i></b>											
Under 50 Miles					X						
Over 50 Miles			X								
<b><i>Other</i></b>											
Keyboard/Ten Key	X										
Fingering (fine dexterity)				X							
Handling (grasping, holding)					X						
Repetitive Motion - Hands					X						
Repetitive Motion - Feet											