

# WAGE GRADE CAREER PATH

**WG 2805**

**Electrician**

This occupation covers non-supervisory jobs involved in the installation, maintenance, troubleshooting, and repair of electrical wiring systems, fixtures, controls, and equipment in industrial, institutional, office, and residential buildings, and on ships. These jobs require knowledge and application of electrical principles, materials, and safety standards.

Jobs below grade 10 are titled Electrical Worker. Jobs at grade 10 and above are titled Electrician.

WG02 - Step

**Part 1**

**Apprentice/Helper/Trainee; Trade/Less than Journeyman**

WG05

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|---|---|
| 1 | Complete New Hire Orientation                                     |
| 2 | Complete Civilian Training Plan requirements for current position |
| 3 | Complete task qualifications for current position                 |
| 4 | Complete task certifications for current position                 |
| 5 | Master simple to common work tasks under supervision              |
| 6 | Maintain successful to above average performance ratings          |

WG05 -  
WG08

**Part 2**

**Trade/Less than Journeyman**

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|---|--|
| 1 | Continue required on-the-job and formal classroom training required in Civilian Training Plan  |
| 2 | Complete task qualifications for current position  |
| 3 | Complete task certifications for current position  |
| 4 | Master common to complex work tasks. Grade 8 , electrical workers require a knowledge of where fixtures, wiring, and controls, such as light switches, circuit breakers, fuses, relays, and outlets, are installed and how they operate. They must have the ability to read and follow wiring diagrams that specify where wiring, fixtures, and controls are installed or are to be hooked up and show the type of wiring, fittings, and equipment installed or to be used. Electrical workers must have the skill needed to remove and replace fixtures and controls, and to make repairs such as tightening connections, wrapping exposed wiring with insulating tape, and soldering loose wire leads to contact points. They must also have the skill needed to rearrange old or install new outlets, relays, switches, and light fixtures in existing systems, and to test circuits to see if they are complete after making repairs or installations. At this grade, electrical workers must have the skill needed to measure, cut, and bend wire and conduit to specified lengths and angles. They must have skill in the use of hand tools and portable power tools, such as screwdrivers, pliers, wirecutters, strippers, drills, soldering irons, and manual or power conduit benders and threaders; and a limited variety of test equipment, for example, meggers, test lamps, and ammeters. |
| 5 | Maintain successful to above average performance ratings   |

**Part 3**

**Journeyman**

- |   |   |
|---|---|
| 1 | Continue required on-the-job and formal classroom training required in Civilian Training Plan   |
| 2 | Complete task qualifications for current position   |
| 3 | Complete task certifications for current position   |
| 4 | Master common to complex work tasks. At Grade 10, At this grade, electricians must have a knowledge of the operation and installation of a variety of complete electrical systems and equipment, such as series, parallel, and compound circuits for single and multiple phase alternating current of varying voltage, amperage, and frequency; wiring systems in industrial complexes and in buildings; and power or regulating and control circuits and distribution panels to industrial machinery, ships' control equipment, computers or laboratory and other electrical equipment. Because grade 10 electricians plan, lay out, install, modify, troubleshoot, and repair a variety of complete systems as well as any parts of these systems, they must have greater knowledge than grade 8 electrical workers about how various circuits, equipment, and controls operate, fit, and work together. Grade 10 electricians must have a knowledge of the various gauges, sizes, and types of wire, conduit, couplings, fittings, relays, boxes, circuit breakers, and other electrical devices, and the ability to arrange and install them in ways that insure proper and safe operation of electrical systems and equipment. They must have the ability to interpret and apply the National Electrical Code, local codes, building plans, blueprints, wiring diagrams, and engineering drawings, and to use trade formulas to calculate common properties, e.g., voltage, voltage drop and current capability in series and parallel circuits, resistance, inductance, capacitance, power factor, current flow, and temperature, and length in single and multiple raceways, conduits, gutters, and cable trays. They must have skill in the use of hand tools; power tools, such as cable pullers, hydraulic benders, and pipe threading machines; and a wide variety of test equipment, for example, meggers, multimeters, frequency meters, watt meters, power factor meters, vibro-grounds, phase rotation meters, audio tone location equipment, high potential testers, ground fault interrupter testing equipment, recording ampmmeters, circuit analyzers, circuit breaker testers, resistance bridges, and cathodic protection test sets. Additionally, some positions require a basic familiarity with electronics to electronic components.   |
| 5 | Master common to complex work tasks. At Grade 11, must have a thorough knowledge of the construction, installation, operation, and troubleshooting of sophisticated circuitry and controls associated with unique projects. For example, they independently formulate the layout sketch of required electrical circuits, wire new test setups, install strain gauge circuits and recording instruments as needed by the test program to measure performance of test articles, check the installed system to insure that specified electrical test conditions are attained, and may troubleshoot the electrical portions of the test equipment during test programs to determine cause of malfunction. Critical limits are controlled by intricate interlock of safety systems of novel design and great complexity. The electricians anticipate and respond quickly to danger signs as they become evident through intricate warning systems to avoid loss of time and expensive equipment. Additionally, electrical portions of items required for specific tests are especially designed and electricians use imagination and skill to construct unique and complex installations, e.g., developing prototype applications, devising modifications to hardware for use in experiments such as modifying controls or constructing feedback control systems, and developing rewiring layouts to meet project and safety requirements involving intricate interconnecting systems. They are knowledgeable of the uses of materials, e.g., special plastics, filters or outlets, that will withstand a variety of environments or other test and experimental conditions, and are knowledgeable of special safety precautions involving handling of hazardous materials such as toxic chemicals, explosive or volatile material, radiation, and asbestos. They must have the ability to use all types of shop and hand tools, and test equipment associated with the electrical trade, such as meggers, oscilloscopes, protective relay testers, multimeters, watt meters, wheatstone bridges, and Kelvin bridges to check alignment, output, resistance to ground, and other electrical characteristics. Additionally, some electricians must have a basic familiarity with electronics to troubleshoot electrical circuits containing electronic components in order to isolate the cause of malfunction, whether electrical or electronic, in complex relay logic circuits for electrical control systems, computer interface devices, analog/digital controls, and solid state motor control circuits for referral to an electronics mechanic for repair. |
| 6 | Provide production support services   |
| 7 | Maintain successful to above average performance ratings  |

*This list is not all inclusive. For more information on your series, visit the OPM site below. Copy and paste the link in your browser.*

[OPM Classification Standards](#)