JATC Southwest Washington Electrical

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Applying & Qualifying for Apprenticeship in the Electrical Industry
Information for Applicants

The National Electrical Contractors Association (NECA) & the International Brotherhood of Electrical Workers (IBEW) jointly sponsor apprenticeship training programs that offer you the opportunity to earn wages & benefits while you learn the skills needed for a trade that can be both challenging & rewarding. You will have the chance to use your mind, as well as your physical skills, to complete work in a variety of settings with the constant opportunity to learn something new.

This is intended to help you make an informed decision about whether or not you would like to pursue an electrical apprenticeship. It will explain how the application process works.

We offer training for three of the primary specialties in electrical work:

- Inside Wiremen – Primarily perform electrical construction work in commercial and industrial settings.
- Residential Wiremen – Primarily perform electrical construction work in residential settings.
- Telecommunications Installer/Technicians – Primarily perform electrical installations for voice, data, video, sound, and other telecommunications areas.

By far, Inside Wiremen is the largest of the three electrical work specialties that we offer. Nationally, the Inside Wiremen position has over 200,000 Journeymen & Apprentices who are members of the IBEW. Just as important, though fewer in number, are the Residential Wiremen, and Telecommunications Installer/Technicians.

Training programs vary in length for the three different specialties. Inside Wiremen is 5 years; Residential Wireman 2 years; and Telecommunications is 3 years.

Inside Wiremen

Inside Wiremen install conduit, electrical wiring, fixtures, and electrical apparatus inside commercial buildings and in a multitude of industrial settings. Major duties for Inside Wiremen include:

- Planning & Initiating Projects
- Establishing Temporary Power during Construction
- Establishing Grounding Systems
- Installing Service to Building and Other Structures
- Establishing Power Distribution within a Project

- Planning & Installing Raceway Systems
- Installing New Wiring & Repairing Old Wiring
- Providing Power & Controls to Motors, HVAC, & Other Equipment
- Installing Receptacles, Lighting Systems, & Fixtures
- Troubleshooting & Repairing Electrical Systems
- Installing & Repairing Traffic Signals, Outdoor Lighting & Outdoor Power Feeders
- Installing Fire Alarm Systems

In performing these duties, Inside Wiremen must use many different kinds of tools, ranging from simple one and two-hand tools to power-assisted tools. They occasionally operate heavy equipment such as trenchers and aerial lifts. (please see "Tool Lists" on page 8 for a complete list of required tools)

Over the course of the five year Inside Wiremen apprenticeship program, apprentices must acquire a wealth of technical knowledge. A recent job analysis identified 83 specific knowledge areas that are important for successful job performance. A few are important ones are:

- The National Electrical Code
- How to Work With Energized Circuits
- Blueprints (Including Symbols Used)
- Electrical Schematic Diagrams
- State and Local Electrical Codes
- First Aid
- Hazardous Materials
- Specific Job Safety Rules

Residential Wiremen

Residential Wiremen work solely in residential setting (single & multi-family dwellings). Major duties for Residential Wiremen include:

- Planning & Initiating Projects
- Establishing Temporary Power during Construction
- Establishing Ground Systems
- Installing Underground Systems (Slab/Foundation)
- Rough-In (Frame Stage)
- Installing Wire & Cable
- Trim Out
- Performing "Hot" Checks
- Troubleshooting & Repairing Electrical Systems

In performing these duties, Residential Wiremen must use many different kinds of tools from simple ones & two-hand tools, to power assisted tools. They occasionally operate heavy equipment such as trenchers. (please see "Tool Lists" on page 8 for a complete list of required tools)

Over the course of the two year Residential Wiremen apprenticeship program, apprentices must become competent in many technical areas, such as:

- The National Electrical Code
- How to Work With Energized Circuits
- Blueprints, Including Symbols Used
- Electrical Schematic Diagrams
- State and Local Electrical Codes
- The Principles of Grounding

- First Aid
- Hazardous Materials
- Specific Job Safety Rules
- Proper Wire/Cable to Use in Different Circumstances

Telecommunications Installer/Technicians

Telecommunications install circuits & equipment for telephones, computer networks, video distribution systems, security & access control systems, & other low voltage systems. Major duties for Telecommunications:

- Planning & Initiating Projects
- Installing Underground Voice or Data Circuit Feeders to Entrance Facilities
- Providing or Connecting to the Grounding Electrode System
- Installing Pathways & Spaces for Installation of Low Voltage Wiring
- Installing & Terminating Wires & Cables
- Installing Local Area Network (LAN) Cabling Systems
- Installing Security & Access Control Systems
- Installing Communications & Sound Distribution Systems
- Testing & Repairing Video, Voice, & Data Systems

In performing these duties, Telecommunications must use many different kinds of tools from simple ones & two-hand tools, to power assisted tools. They occasionally operate heavy equipment such as trenchers. (please see "Tool Lists" on page 8 for a complete list of required tools)

Over the course of the three year Telecommunications apprenticeship program apprentices must become competent in many technical areas. A few of the most important ones are:

- Color Codes (Proper Termination Sequence)
- Structured Wiring
- Cable Testing Requirements & Standards
- Local Area Networks (LAN)
- The Basics of Telephony
- Blueprints, Including Symbols Used
- Electronic Industries Association (EIA)/ Telecommunications Industry Association (TIA) Standards
- The Principles of Grounding
- First Aid
- Hazardous Materials
- Proper Wire/ Cable to Use in Different Circumstances

The Application Process

To apply for any of the electrical apprenticeship programs, you must first complete and application request form to receive your application. Your application will be evaluated to determine whether or not you meet the program's basic requirements (found on the information sheets outlining each program).

Minimum requirements can be waived if you have been working in the electrical construction industry and meet specific work hour requirements. For our JATC this would be 4,000 hours documented with Washington State Labor & Industries.

If you meet the basic requirements, you will be scheduled to take the NJATC aptitude test. The test consists of two tests. It will take approximately 2 ½ hours to complete. The number of items and the amount of time allotted for each test are:

- Algebra & Functions 33 Items 46 Minutes
- Reading Comprehension 36 Items 51 Minutes

You will take a short break between the Algebra and Functions Test and the Reading Comprehension Test.

Approximately 2 to 4 weeks after you take the test you will receive the results.

- If you obtain a qualifying score on the test you will be scheduled for an oral interview. You will be interviewed by a Committee representing both NECA and the IBEW. Based on the interview you will receive a ranking score. Your name will be placed on an eligibility lest for two (2) years. As new positions become available in the apprenticeship program, names will be taken off the respective eligibility list in order of the ranking score. If you are not selected to begin an apprenticeship during that 2 year period, you will need to reapply if you are still interested.
- If you do not obtain a qualifying score on the test you must wait a full six (6) months before you may reapply to retake the test. The six month rule remains in effect after each subsequent retake of the test. Willful attempts to violate this rule may result in permanent disqualification.

Questions & Answers

Q. If I do not score well on the tests, can I take them again?
A. Yes, you may take the test again after a period of six (6) months has elapsed from your most recent test date.

Q. Are there any penalties for guessing on the tests?
A. No, there are no penalties for guessing. Your score will be based on the number of items you answer correctly.

Q. Should I work as fast as I can when taking the test?
A. Most applicants fill they have plenty of time to complete each of the tests without rushing. You should work steadily and carefully. Do not spend too much time on any one question.

Q. Should I study to do better on the tests?
A. You should review the sample questions provided. If you find that certain types of questions are difficult for you, you can review material that is similar to those questions. However, there is no need to memorize certain formulas or factual material in order to do well on the tests. **Previous knowledge of electrical work is not required.**

For Your Information:

These tests are validated for use by sponsors of IBEW/NECA electrical apprenticeship programs. They have been developed to assist in the selection of apprentices for the respective apprenticeship programs.

The fact that an applicant is not scheduled for an oral interview, as a result of this test, does not speak for the applicant's ability, or lack thereof, to be most successful in many other occupations. This test was specifically developed to assist our program sponsors, helping them to select those who are most likely to succeed in our apprenticeship programs.

Many apprenticeship programs receive large numbers of applications – four, five, six or more times the number of new apprenticeship openings (as defined by the limited number of job and training opportunities being available at a given time). The validated testing instrument is a tool to assist in the selection of the very best applicants that have an aptitude matching the specified job performance requirements. In this way, the number of applicants brought to the interview table is based upon objective, equitable, job-related criteria.

Instructions for the Sample Test

As part of the selection process, you will be required to take an aptitude test designed to determine whether you possess the abilities that will help you succeed within the electrical construction industry. The following will provide a description of each of the tests and some sample test questions. These questions are similar to those on the actual tests, allowing you to know what to expect on the day of your test.

You may use these items as a sample test and then check your answers with the key. Only one answer is correct for each question. If you find some of the sample items to be difficult for you, you may want to review material that is similar to the sample item.

Sample Algebra and Functions

This is a test of you ability to solve problems using algebra and associated mathematical functions. Please note that at no time will a calculator be allowed during testing. There are five sample questions.

1) Consider the following formula: $A=B+3(4-C)$

If B equals 5 & C equals 2, what is the value of A?

A. 7 B. 11 C. 12 D. 17

2) Consider the following formula: $y=3(x+5)(x-2)$

Which of the following formulas is equivalent to this one?

A. $y=3x^2+9x-30$ B. $y=x^2+3x-10$ C. $y=3x^2+3x-10$

D. $y=3x^2+3x-30$

3) Consider the following pattern of numbers: 110,112,107,109,104

What is the next number in the pattern?

A. 97 B. 99 C. 106 D. 109

4) Consider the following formula: $a=\frac{1}{2}b - 4$

Which of the following statements is true for this formula?

A. When the value of b is less than 8, a is negative.
B. When the value of b is greater than 8, a is negative.
C. When the value of b is less than 8, a is positive.
D. When the value of b is greater than 4, a is positive.

5) Consider the following table:

X	Y
0	-5
1	-4
2	-3
3	-2
4	-1
5	0
6	1

Which of the following choices represents the same relationship as demonstrated in this table?

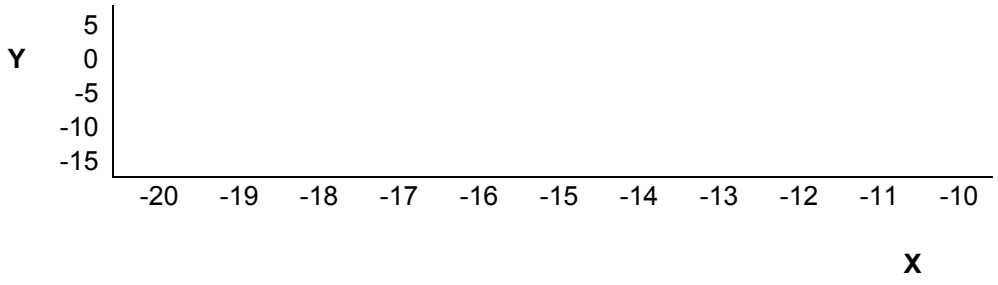
A.

X	Y
10	-40
20	-30
30	-20
40	-10

B. $Y=\frac{x}{2} - 5$

C. Y is equivalent to the difference between the value of X and a constant C, where C equals 5.

D.



Sample Reading Comprehension

This test measures your ability to obtain information from written passages. You will be presented with a passage followed by a number of questions about it. A sample passage is shown below, followed by three sample questions. This passage is shorter than those on the actual test.

Passage

The timing of New Year's Day has changed with customs and calendars. The Mayan civilization, on what is now called the Yucatan peninsula of Mexico, celebrated the New Year on one of the two days when the noonday sun is directly overhead. In the equatorial regions of the earth, between the Tropics of Cancer and Capricorn, the sun is in this position twice a year, once on its passage southward, and once on its passage northward. At the early Mayan city of Izapa in the southern Yucatan, the overhead date for the sun on its southward passage was August 13. The Mayans celebrated this as the date for the beginning of the New Year. Later at the more northerly Mayan site at Edzna, the corresponding overhead date is July 26. Analyses of Mayan pictorial calendars indicate that they celebrated the New Year of August 13 prior to 150 AD, and on July 26 after that year. This change has been explained by archaeological dating that 150 AD was the time that the Mayans moved the hub of their civilization from the southern to the northern site.

6) According to the passage, the sun at Edzna was directly overhead at noon on:
   a. July 26 only
   b. August 13 only
   c. July 26 and one other date
   d. August 13 and one other date

7) If the Mayans had moved their civilization's center south of Izapa, their new date for celebration of the New Year would probably have been closest to which of the following date?
   a. January 1
   b. February 20
   c. March 25
   d. September 15

8) Based on the information in the passage, which of the following statements is true?
   a. Mayans made Edzna the capital because it was more temperate than Izapa.
   b. All Mayans moved to Edzna in 150 AD.
   c. Mayans used calendars to mark the passage of time.
   d. The Mayan city of Izapa was destroyed in 150 AD.

Sample Test Answer Key

The following are the correct answers for the sample questions.

Algebra and Functions:

1. B
2. A
3. C
4. A
5. C

Reading Comprehension

6. C
7. D
8. C

Tool Lists

CONSTRUCTION

1 Pair Side Cutters *
1 Pair Diagonal Pliers *
1 Claw Hammer *
2 Pair Channel Lock Pliers (420/430 or Equal) *
1 Small Flat Tip Screwdriver
1 Medium Flat Tip Screwdriver *
1 Large Flat Tip Screwdriver
1 Knife
2 Stubby Screwdrivers - Flat 7 Phillips
1 Phillips Screwdriver *
1 Torpedo Level (Magnetic)
1 Center Punch or Awl
1 10" Crescent Wrench *
1 Pair Long Nose Pliers
1 Tool Container (Pouch, Box, Bag, Etc.) *
1 Steel Tape Measure (12' Minimum) *
1 Hacksaw Frame *
1 Wire Stripper *
1 UL Approved Wiggins or Equal Tester *
1 Set Allen Wrenches (3/8" - 1/4")
1 Set Nut Drivers or 1/4" Drive Socket Set
1 Pair General Work Gloves
1 Set Combination Wrench (3/8" - 9/16")
1 Current Code Book

RESIDENTIAL

1 Tool Pouch *
1 Knife *
1 Tape Measure *
1 Hammer *
1 Romex Stripper *
1 Small Level *
1 Center Punch or Awl
1 Nailing Tool
1 Small Wood Chisel (opt)
1 10" Crescent Wrench
1 Slide Cutter *
1 500 Volt Tester
1 Key Hole Saw Frame *
1 Hacksaw Frame
1 Polarity Tester
1 Steel Tape, up to but not to exceed 50' (opt)
1 Screwholding Type Screwdriver
1 Diagonal Pliers *
1 Long Nose Pliers
1 Channel Lock Pliers *
1 4" Screwdriver *
1 6" Screwdriver *
1 6" Phillips Screwdriver *
1 Current Code Book

LOW VOLTAGE

Cable Knife *
Phillips Screwdriver *
Cable Ringer/Stripper *
Tape Measure *
Channel Locks *
Hacksaw Frame
V.O.M.
Side Cuts/Flush Cuts
Lineman Snips *
Torpedo Level *
Pencil *
8" Crescent Wrench *
Needle Nose Pliers *
Impact Tool/Punchdown (no blades)
Toner & Inductive Amp
Flashlight *
Slotted Screwdriver *
Drywall Saw *
Tri Tap Tool *
#2 Square Drive *
Allen Wrenches
Current Code Book

* Indicates minimal starting tools. All apprentices should add to their tools as rapidly as possible until a full set of tools is acquired.

APPLICATION INFORMATION:

APPLICATIONS: 10 days to return application, 60 days to complete file.

APTITUDE TEST: Scores below qualifying score – Must wait 6 months from date of test to reapply.
Scores above qualifying score – Must be interviewed within 1 year, by order of app. #.

NO SHOWS:

Aptitude Test: Must wait 6 months from date of missed test to reapply.
Interview: Must wait 6 months from date of missed interview to reapply.
Orientation: Must wait 6 months from date of missed orientation to reapply.

FAILED DRUG TEST: Must wait 1 year from date of interview to reapply.

RE-INTERVIEW: Must wait 6 months from original interview date.
Must have completed a minimum of 1,000 hours of Electrical Construction work or 2 or more post-secondary trade related classes since date of interview.
Must complete a request form.
Interview score will be good for 2 years from date of re-interview.