



# ELECTRICAL PRE-APPRENTICESHIP

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## Youth Boot Camp

### *York Electrical Institute*

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# ***York Electrical Institute - Electrical Bootcamp***

## **Course Description**

This course is an introduction to becoming a construction or maintenance electrician. Students will become familiar with tools, materials, basic electrical theory, safety, and conduit bending through the use of classroom discussion and lab exercises. Group discussions will be held on various employability topics including attendance, productivity, appearance, and professionalism. The course will culminate with an individual capstone project encompassing each of the skills learned to demonstrate student proficiency.

## **Credentials Earned**

Students completing the York Electrical Institute - Electrical Bootcamp will earn a **Pre-Apprenticeship Certificate of Completion** from the Institute as well as the Pennsylvania Department of Labor. Students completing this course will also be **Guaranteed an Interview** into the Registered Apprenticeship at York Electrical Institute. This course can increase a student's chance of selection since they will have some industry training and a demonstrated interest in the field.

## **Partnering with YCAL**

We would like to invite York County High Schools to participate in our registered pre-apprenticeship programs. This program will be launched county-wide in the 2019-20 school year. The Boot Camp program will open to Juniors and Seniors. York County Alliance for Learning will assist in recruitment and promotion activities to make this program more accessible to schools.



# York Electrical Institute - Electrical

## Bootcamp

### Course Syllabus

#### Day 1: Orientation

- Introductions: expectations, boundaries, goals (check list, project)
- YEI, IBEW, NECA, NABTU
- Safety: Electrical Hazards Awareness **BC 10, 11, appendix B**
- Terminology: **BC appendix A**
- Electrical system overview **BC 5**
- The work place of an electrical worker
- Electrical Careers overview
- Awareness: Something Fishy; Absenteeism
- Homework: Natural disaster recovery

#### Day 2: Tools of the Electrical Worker

- Measuring: folding rule, tape measure, wheel, laser, string **BC 12 appendix C**
- Basic Hand tools, hacksaw use, **BC 1 Apps. 8**
- Power tools **BC 2, Apps 13**
- Ladder safety and use **Apps 10**
- PPE & Fall protection
- Material: Hardware, supports, boxes, fittings, devices, conduit **BC 3, Apps 6**
- Awareness: Crossing the Line; Professional personal conduct
- Homework: Real world observation of electrical systems

#### Day 3: Wiring and devices

- Blue prints/ schematics
- Cable and Wire: Types, sizes, solid vs. strd.d, Al vs. CU **BC 6, 7**
- Splicing, labeling/markings: **BC 13 appendix D, Apps 22**
- Wiring devices: **BC 8, 9 Apps 1,2,3,5**
- Awareness: Time is Money; Productivity
- Homework: Draw a blueprint/ schematic of a room at home

### Day 4: Conduit fabrication

- Tools and material introduction
- Carrying conduit **Apps 9**
- Hand bending: **BC 15 and lab 1, Apps 11, 12**
- Cable pulling: **Apps 20**
- Bender and threading rotation; Mechanical, hydraulic, threading, PVC heater

### Day 5: Project Planning

- Introduction of capstone project
  - Explain resources
  - Students develop design/schematic
- Discuss application process for apprenticeship and how to prepare for an interview
- Awareness: First Impressions: The Power of Personal Appearance
- Homework: finish capstone project design

### Day 6: Capstone Project

- Students fabricate and install their project with instructor guidance

### Graduation Evening

- Open House at the York Electrical Institute with Parents and Teachers
- Students can share their Capstone Projects still mounted to walls
- Meet current York Electrical Institute Apprentices

\* BC = Boot Camp Textbook Lesson

\*\* Apps = Hands-on Application

# *York Electrical Institute - Electrical Bootcamp*

## **Instructor Bio**

Scott Brenneman graduated from Red Lion Senior High School in 1982. He completed his electrical apprenticeship in 1988 and earned the title Journeyman Wireman. Since then, he has worked in a variety of position within the electrical construction and maintenance industry. Starting as an apprentice, he has worked his way up to journeyman, foreman, general foreman, and supervisor in diverse types of facilities. Scott has worked in manufacturing, health care, industrial, government, and commercial facilities. Scott recently completed his first year of Instructor training at the University of Michigan, Ann Arbor.

## **About York Electrical Institute**

York Electrical Institute is the training provider established through a partnership between International Brotherhood of Electrical Workers Local 229 and the Pen-Del-Jersey Chapter of the National Electrical Contractors Association. Registered with the PA Department of Labor on June 29, 1951, the Institute operates two state-registered apprenticeship programs. It trains approximately 100 post-secondary electrical students per year. It currently employs 16 professional educators with various areas of expertise in its 15,000 square foot training center made up of 5 classrooms and 4 lab areas.





## Inside Wireman Job Description

While the Outside Lineman works on the distribution network, bringing power from sources of generation to the customers, the Inside Wireman's job is to distribute and connect the customer's electrical equipment to that power source. The Inside Wireman installs and maintains all of the various types of electrical systems found in commercial and industrial facilities. This equipment may be lighting and receptacles, to motors, to heating equipment, to systems that control the operation of all of a facility's energy usage.

The Inside Wireman installs conduit systems that contain the wire from the motor control centers or panelboards to all of the equipment that uses electricity. Those conduits may contain power cables or control cables. Many of the conduit systems are exposed and must be installed to exacting standards using neat and workmanlike craftsmanship.

The work of an Inside Wireman can vary. One day the Inside Wireman could be installing a Fire Alarm System or Security System in a high-rise building and the next day he or she could be installing conduit in a ditch on the outside of the building. Inside Wireman also install electrical systems in industrial facilities such as chemical plants, power plants, chip manufacturing facilities and automobile plants. Each type of installation has specific electrical needs and systems to support those needs. While there are many tasks associated with the Inside Wireman classification, the apprenticeship training provides all of the knowledge necessary for an individual to perform these tasks in a professional manner while helping the individual to sharpen his or her skills and abilities to be the best workers in the electrical construction and maintenance industry.

The duties of an Inside Wireman are listed below. The number next to each duty is the average of the percentage of journeymen reporting that they perform that task.

- 99%** Installing New Wiring and Repairing Old Wiring
- 98%** Installing Receptacles, Lighting Systems and Fixtures
- 97%** Planning and Installing Raceway Systems
- 94%** Troubleshooting and Repairing Electrical Systems
- 92%** Planning and Initiating Project
- 92%** Supervising Journeymen and Apprentices
- 88%** Establishing Temporary Power During Construction
- 88%** Establishing Power Distribution within Project
- 87%** Establishing Grounding System
- 86%** Installing Service to Buildings and Other Structures
- 86%** Providing Power and Controls to Motors, HVAC, and Other Equipment

**82%** Installing Fire Alarm Systems

**71%** Installing and Repairing Traffic Signals, [Outdoor Lighting](#), and Outdoor Power Feeders

**67%** Establishing OSHA and Customer Safety Requirements

**67%** Installing Instrumentation and Process Control Systems, Including [Energy Management Systems](#)

**64%** Erecting and Assembling Power Generation Equipment

**57%** Installing Security Systems

**56%** Installing, Maintaining and Repairing Lightning] Protection Systems

**36%** Installing and Repairing Telephone and Data Systems

## Cost Comparison

### Traditional 4-Year College vs. 5-Year Apprenticeship

#### Average Cost of a 4 Year College Degree

#### Average Cost of an IBEW 5 Year Apprenticeship

\$ 70,000.00	Student Loan @ 7.5% Interest		No cost to students
\$ 563.92	Monthly for 20 years		
\$ 65,339.66	Paid in Interest		
\$ 135,339.66	Total Loan Repayment		

#### Average Wages you may make if you graduate

#### Average IBEW Local 229 Wages

\$ -	First 4 Years in College	\$ 26,710.00	1st Year Apprentice
\$ 240,000.00	at \$40,000 per year next 5-10 years	\$ 34,580.00	2nd Year Apprentice
\$ 300,000.00	at \$60,000 per year next 11-15 years	\$ 40,860.00	3rd Year Apprentice
\$ 400,000.00	at \$80,000 per year next 16-20 years *	\$ 47,140.00	4th Year Apprentice
	* only about 30% ever make it to this level	\$ 53,440.00	5th Year Apprentice
		\$ 349,300.00	Journeyworker years 6-10
		\$ 374,300.00	Journeyworker years 11-15
		\$ 399,300.00	Journeyworker years 16-20

\$ 940,000.00	Average total over 20 years	\$ 1,325,630.00	Average total over 20 years
\$ 135,339.66	Deduct for school	\$ -	Deduct for school
\$ 804,660.34	20 Year Net Income	\$ 1,325,630.00	20 Year Net Income

**An IBEW local 229 Electrician makes about \$520,970 more during their career than a traditional college graduate.**

- \* apprentice rates based on 2000 hours per year at 6-6-16 pay rates
- \* journey worker rates based on 2000 hours per year and \$0.50 per year pay increase
- \* fringe benefits are not included
- \* your results may vary, no guarantee is implied or expressed

## *A LOOK TO THE FUTURE – ADDITIONAL PROGRAMS*

### **BOOT CAMP**

The boot camp can run, as built, as a stand-alone introductory course or used as a suggested/required prerequisite to Interim Credentials. As the Boot Camp is only a six-week course, it could also be run twice a year. Possibly a fall and a winter session.

### **INTERIM CREDENTIALS**

The Interim Credentials (IC) program is an online, self-paced class with instructor mediation to run a full year. Monthly, full day labs over the course of the year will round out the requirements for the completion of first year apprentice. This class is suggested to be for seniors only as they will be ready to enter the work force upon graduation. The college-level curriculum requires a minimum of Algebra 1 prior to entry and includes a substantial amount of homework.

### **PATH TO APPRENTICESHIP**

York Electrical Institute is providing a clear path to apprenticeship with these youth offerings. The Boot Camp will be a recommended prerequisite for the Interim Credentials program and primarily offered to High School Juniors.



Seniors who have previously completed the Boot Camp are encouraged to participate in the Interim Credential (IC) program and earn apprenticeship credit.

We believe this process will allow students to learn more about the electrical industry before committing to the rigorous coursework involved in the IC program. There has never been a better opportunity for students interested in becoming electricians. Graduates of this program will be entering the workforce with valuable practical skills and knowledge truly making them career ready.