



Apprenticeship Training Program

Program Level
Documents



Program Description

Mike Holt's Apprenticeship Training Program

Mike Holt's Apprenticeship Training Program has been developed to provide apprentices with the knowledge required to become journeyman electricians. This four year program utilizes Mike's industry leading electrical texts that are proven to produce some of the best electricians in the industry today. Supplemented with his instructional support material such as presentations, videos, and simulated exams, this program is tailored to meet the needs of various types of learners.

This program totals 658 clock hours logically structured to create a natural progression of electrical subjects. From day one strong emphasis is placed on safe work practices and is maintained throughout the program. The first year covers electrical fundamentals which are essential in understanding specific electrical equipment operation and some complex code requirements. Blueprint reading, calculations, code requirements, and wiring methods are discussed in each subsequent year. Estimating and industrial applications are covered in detail in the final year.

Upon successful completion students are expected to be eligible (*also have the required working hours*) and able to pass their journeyman's exam. Journeyman electricians do a wide variety of electrical tasks in many different environments. From system design, to installations, and even managing and training apprentices, journeyman electricians play a vital role in the electrical industry.

Resources

Required Textbooks: Quick Reference by Year

Year One

- Basic Electrical Theory
- Understanding the NEC Volume 1 Textbook
- Understanding the NEC Volume 1 Workbook

Year Two

- Basic Electrical Theory
- Understanding the NEC Volume 1 Textbook
- Understanding the NEC Volume 1 Workbook

Year Three

- Understanding the NEC Volume 1 Textbook
- Understanding the NEC Volume 1 Workbook
- Understanding the NEC Volume 2 Textbook
- Understanding the NEC Volume 2 Workbook
- Grounding versus Bonding
- Limited Energy and Communications
- Understanding Basic Motor Controls
- Business Management Skills Workbook
- Power Quality

Year Four

- NEC Exam Preparation
- Understanding Basic Motor Controls
- Electrical Estimating
- Understanding the NEC Requirements for Photovoltaic Systems
- 101 Essential Code Rules

Resources

Program Textbook List

Basic Electrical Theory, 2nd. Leesburg: Mike Holt Enterprises, Inc, ISBN 1-932685-12-X, 2007

Basic Motor Controls. Leesburg: Mike Holt Enterprises, Inc, ISBN 978-1-932685-32-9, 2009

Electrical Estimating. Leesburg: Mike Holt Enterprises, Inc, ISBN 0-9710307-8-2, November 2001

NEC Exam Preparation. 2008. Leesburg: Mike Holt Enterprises, Inc, ISBN 978-932685-36-7, 2008

Understanding the NEC Volume 1. Leesburg: Mike Holt Enterprises, Inc, ISBN 978-1-932685-33-6, 2008

Understanding the NEC Volume 1 Workbook. Leesburg: Mike Holt Enterprises, Inc, ISBN 978-1-932685-45-9, 2008

Understanding the NEC Volume 2. Leesburg: Mike Holt Enterprises, Inc, ISBN 978-1-932685-34-3, 2008

Understanding the NEC Volume 2 Workbook. Leesburg: Mike Holt Enterprises, Inc, ISBN 978-1-932685-46-6, 2008

Understanding the NEC Requirements for Grounding versus Bonding. Leesburg: Mike Holt Enterprises, Inc, ISBN 978-1-932685-38-1

Understanding the NEC Requirements for Limited Energy and Communication Systems. Leesburg: Mike Holt Enterprises, Inc, ISBN 1-932685-37-5, 2008

Business Management Skills Workbook. Leesburg: Mike Holt Enterprises, Inc, ISBN 1-932685-25-1, 2007

101 Essential NEC Rules. Leesburg: Mike Holt Enterprises, Inc, ISBN 978-1-932685-49-7, 2008

Understanding NEC Requirements for Photovoltaic Systems. Leesburg: Mike Holt Enterprises, Inc, ISBN 978-1-932685-00-0, 2010

Power Quality. Leesburg: Mike Holt Enterprises, Inc, ISBN 978-1-932685-00-0, 2009

National Electrical Code 2008. Batterymarch Park: National Fire Protection Association, ISBN 978-087765790-3, 2007

Printreading Based On the 2008 NEC. 2008. Homewood: American Technical Publishers, Inc, ISBN 978-08269-1567-2, 2008 R.T. Miller

Resources

Program Presentations

OSHA 10 Hour Training (OSHA.gov)

- Introductions to OSHA
- Electrical Safety
- Fall Protection
- Excavations
- Cranes
- Materials, Handling, Use, and Disposal
- Tools – Hand and Power
- Personal Protective Equipment (PPE)
- Scaffolds
- Stairways and Ladders

Basic Electrical Theory

- Chapter 1
- Chapter 2
- Chapter 3
- Chapter 4
- Chapter 5
- Chapter 6
- Annex A – Grounding Theory

Understanding the NEC Vol. 1

- Chapter 1 90-110
- Chapter 2 200-285
- Chapter 3 300-314
- Chapter 3 320-392
- Chapter 4 400-450

Understanding the NEC Vol. 2

- Chapter 1 90-110
- Chapter 5 500-590
- Chapter 6 600-702
- Chapter 7 725-802

Exam Preparation

- Chapter 2, Unit 5
- Chapter 2, Unit 6
- Chapter 2, Unit 7
- Chapter 2, Unit 8
- Chapter 2, Unit 9
- Chapter 3, Unit 10
- Chapter 3, Unit 11
- Chapter 3, Unit 12

Grounding versus Bonding

- Part 1
- Part 2

Electrical Estimating

Understanding Basic Motor Controls

Resources

Program Videos	# of Discs
Basic Electrical Theory	3
How to Use the NEC	1
General Requirements, Circuits and Protection	2
Wiring Methods	2
Equipment for General Use	1
Grounding versus Bonding	2
Special Occupancies	1
Special Equipment	1
Electrical Estimating	2
Understanding Basic Motor Controls	2
<i>Exam Preparation:</i>	
Raceway and Box Calculations	1
Conductor Sizing and Protection	1
Motor and Air Conditioning Calculations	1
Voltage Drop Calculations	1
Dwelling Unit Calculations	1
Multifamily Dwelling Calculations	1
Commercial Calculations	1
Transformer Calculations	1

Program Overview

DC Fundamentals & Residential Wiring First Year

Topic	Hours
Orientation	3.5
Workplace Safety (<i>Construction</i>)	10.5
Direct Current Fundamentals	38.5
Mathematics	07.0
Intro to the NEC	03.5
General Requirements	17.5
Wiring & Protection	31.5
Blueprint Reading	07.0
Practical Application	14.0
Quarterly Exam Review & Discussion	14.0
Quarterly Final Examination	14.0
Fourth Quarter Exam Review	03.5
Total	164.5

AC Fundamentals & Commercial Wiring Second Year

Topic	Hours
Orientation	03.5
Safety (<i>PPE</i>)	03.5
Alternating Current Fundamentals	31.5
Grounding (<i>Article 250</i>)	17.5
Wiring & Protection	03.5
First Aid	03.5
Wiring Methods	45.5
Blueprint Reading	07.0
Practical Application	17.5
Quarterly Exam Review & Discussion	14.0
Quarterly Final Examination	14.0
Fourth Quarter Exam Review	03.5
Total	164.5

Program Overview

Motors, Controls, & Industrial Wiring **Third Year**

Topic	Hours
Orientation	03.5
Safety (<i>PPE</i>)	03.5
Power Quality	10.5
Equipment for General Use	24.5
Grounding vs. Bonding	14.0
First Aid (<i>CPR</i>)	03.5
Leadership	07.0
Special Occupancies	07.0
Special Equipment	14.0
Special Conditions	10.5
Motor Control	21.0
Blueprint Reading	10.5
Practical Application	03.5
Quarterly Exam Review & Discussion	14.0
Quarterly Final Examination	14.0
Fourth Quarter Exam Review	03.5
Total	164.5

Special Systems & Calculations **Fourth Year**

Topic	Hours
Orientation	03.5
Safety (<i>PPE</i>)	03.5
Motor Control	07.0
Electrical Estimating	10.5
Fire Alarm	10.5
Lighting & Troubleshooting	03.5
Solar/PV Requirements	07.0
Calculations	52.5
Theory & Code Review	28.0
Quarterly Exam Review & Discussion	14.0
Quarterly Final Examination	21.0
Fourth Quarter Exam Review	03.5
Total	164.5

Instructor Qualifications

Minimum Experience Requirement Recommendations

Instructors should possess one or more of the following;

- Strong background in electrical theory (Associates Degree in Electrical/Electronic Technology or military equivalent preferred but not required)
- 5 years practical experience working with electricity or electronics
- 5 years practical experience working in residential wiring, commercial, or industrial wiring
- Proficient with the National Electrical Code
- Prior teaching experience or certified technical education instructor a plus
- Meet any additional school or accreditation requirements

Class Training Schedule

Class	First Year Students	Second Year Students	Third Year Students	Fourth Year Students
1	Orientation	Orientation	Orientation	Orientation
2	OSHA 10hr Safety Training <i>Construction Safety</i>	Safety <i>PPE</i>	Safety <i>PPE</i>	Safety <i>PPE</i>
3	OSHA 10hr Safety Training <i>Construction Safety</i>	AC Fundamentals <i>The Electrical System</i>	Theory/Review 1 <i>Power Quality</i>	Motor Control 6 <i>Miscellaneous Requirements</i>
4	OSHA 10hr Safety Training <i>Construction Safety</i>	AC Fundamentals <i>Protection Devices</i>	Theory/Review 2 <i>Power Quality</i>	Motor Control 7 <i>Review & Exam</i>
5	DC Fundamentals <i>Matter</i>	AC Fundamentals <i>Alternating Current</i>	Theory/Review 3 <i>Power Quality</i>	Electrical Estimating/Printreading <i>Introduction</i>
6	DC Fundamentals <i>Electron Theory</i>	AC Fundamentals <i>Capacitance</i>	NEC Equipment for General Use <i>Flexible Cords & Fixture Wires</i>	Electrical Estimating/Printreading <i>Understanding Labor Units</i>
7	DC Fundamentals <i>Magnetism</i>	AC Fundamentals <i>Induction</i>	NEC Equipment for General Use <i>Switches & Receptacles</i>	Electrical Estimating/Printreading <i>The Estimating Process</i>
8	DC Fundamentals <i>Electricity</i>	AC Fundamentals <i>Power Factor & Efficiency</i>	NEC Equipment for General Use <i>Switchboards & Panelboards</i>	Fire Alarm 1
9	DC Fundamentals <i>Electromagnetism</i>	AC Fundamentals <i>Motors</i>	NEC Equipment for General Use <i>Luminaires & Low Voltage Lighting Systems</i>	Fire Alarm 2
10	DC Fundamentals <i>Uses of Electromagnetism</i>	AC Fundamentals <i>Generators</i>	NEC Equipment for General Use <i>Appliances & Fixed Electric Space Heaters</i>	Fire Alarm 3

Class Training Schedule

Class	First Year Students	Second Year Students	Third Year Students	Fourth Year Students
11	DC Fundamentals <i>The Electrical Circuit</i>	AC Fundamentals <i>Transformers</i>	1 st Quarter <i>Review</i>	Lighting & Troubleshooting
12	1 st Quarter <i>Review</i>	1 st Quarter <i>Review</i>	1 st Quarter <i>Final Exam</i>	1 st Quarter <i>Review</i>
13	1 st Quarter <i>Final Exam</i>	1 st Quarter <i>Final Exam</i>	NEC Equipment for General Use <i>Motors, Motor Circuits, and Controllers</i>	1 st Quarter <i>Final Exam</i>
14	DC Fundamentals <i>Math</i>	Practical Application	NEC Equipment for General Use <i>Air Conditioning & Transformers</i>	Solar Training <i>Part 1</i>
15	DC Fundamentals <i>Electrical Formulas</i>	NEC Wiring & Protection <i>Grounding 1</i>	Safety <i>Grounding versus Bonding Video Part 1</i>	Solar Training <i>Part 2</i>
16	DC Fundamentals <i>Series Circuits</i>	NEC Wiring & Protection <i>Grounding 2</i>	Safety <i>Grounding versus Bonding Video Part 2</i>	Code Essentials 1 <i>101 Code Rules</i>
17	DC Fundamentals <i>Parallel Circuits</i>	NEC Wiring & Protection <i>Grounding 3</i>	Safety <i>Grounding versus Bonding Video Part 3</i>	Code Essentials 2 <i>101 Code Rules</i>
18	DC Fundamentals <i>Series-Parallel Circuits</i>	NEC Wiring & Protection <i>Grounding 4</i>	Safety <i>Grounding versus Bonding Video Part 4</i>	Code Essentials <i>101 Code Rules 3</i>
19	DC Fundamentals <i>Multiwire Circuits</i>	NEC Wiring & Protection <i>Grounding 5</i>	First Aid <i>CPR</i>	Calculations <i>Electrician's Math Basic Electrical Formulas</i>
20	Intro to the NEC <i>How to Use the NEC (Video)</i>	NEC Wiring & Protection <i>Surge Arresters & TVSS</i>	Leadership 1	Theory 1 <i>Electrical Circuits</i>

Class Training Schedule

Class	First Year Students	Second Year Students	Third Year Students	Fourth Year Students
21	NEC General <i>Introduction</i>	2 nd Quarter <i>Review</i>	Leadership 2	Theory 2 <i>Understanding Alternating Current 1</i>
22	2 nd Quarter <i>Review</i>	2 nd Quarter <i>Final Exam</i>	2 nd Quarter <i>Review</i>	Theory 3 <i>Understanding Alternating Current 2</i>
23	2 nd Quarter <i>Final Exam</i>	First Aid	2 nd Quarter <i>Final Exam</i>	Theory 4 <i>Motors and Transformer Basics 1</i>
24	NEC General <i>Definitions 1</i>	NEC Wiring Methods & Materials <i>Wiring Methods 1</i>	NEC Special Occupancies <i>Hazardous Locations/Garages & Fuel Dispensing</i>	Theory 5 <i>Motors and Transformer Basics 2</i>
25	NEC General <i>Definitions 2</i>	NEC Wiring Methods & Materials <i>Wiring Methods 2</i>	NEC Special Occupancies <i>Healthcare & Assembly, Mobile, Manufactured, and Temporary</i>	2 nd Quarter <i>Review</i>
26	NEC General <i>Requirements for Electrical Installations 1</i>	NEC Wiring Methods & Materials <i>Conductors for General Wiring</i>	NEC Special Equipment <i>Electric Signs & Manufactured Wiring Systems – Office Furnishings & Elevators</i>	2 nd Quarter <i>Final Exam</i>
27	NEC General <i>Requirements for Electrical Installations 2</i>	NEC Wiring Methods & Materials <i>Cabinets, Cutout Boxes, and Meter Sockets</i>	NEC Special Equipment <i>Vehicle Chargers & Welders</i>	Calculations <i>Raceway & Box Calculations</i>
28	NEC Wiring & Protection <i>Grounded (Neutral) Conductors</i>	NEC Wiring Methods & Materials <i>Outlet, Device, Pull & Junction Boxes, Conduit Bodies, and Handhole Enclosures</i>	NEC Special Equipment <i>Audio & IT Equipment</i>	Calculations <i>Conductor Sizing & Protection 1</i>
29	NEC Wiring & Protection <i>Branch Circuits 1</i>	NEC Wiring Methods & Materials <i>NM Cable & Service Entrance Cable</i>	NEC Special Equipment <i>Swimming Pools</i>	Calculations <i>Conductor Sizing & Protection 2</i>
30	NEC Wiring & Protection <i>Branch Circuits 2</i>	NEC Wiring Methods & Materials <i>UF Cable & RNC</i>	NEC Special Conditions <i>Emergency & Standby Systems</i>	Calculations <i>Motor & Air Conditioning Calculations 1</i>

Class Training Schedule

Class	First Year Students	Second Year Students	Third Year Students	Fourth Year Students
31	NEC Wiring & Protection <i>Branch Circuits 3</i>	NEC Wiring Methods <i>AC, MC, & MI Cable</i>	NEC Special Conditions <i>Remote Control, Signaling, and Power Limited Circuits</i>	Calculations <i>Motor & Air Conditioning Calculations 2</i>
32	NEC Wiring & Protection <i>Feeders</i>	3 rd Quarter Review	3 rd Quarter Review	Calculations <i>Voltage Drop</i>
33	NEC Wiring & Protection <i>Branch Circuits, Feeder, and Service Calculations</i>	3 rd Quarter Final Exam	3 rd Quarter Final Exam	Calculations <i>Dwelling Units 1</i>
34	NEC Wiring & Protection <i>Outside Wiring</i>	NEC Wiring Methods <i>FMC, LFMC, & LFNC</i>	NEC Special Conditions <i>Fire Alarm/Limited Energy & Communications</i>	Calculations <i>Dwelling Units 2</i>
35	NEC Wiring & Protection <i>Services</i>	NEC Wiring Methods <i>EMT, IMC & RMC</i>	Blueprint Reading Part 5 <i>Industrial Locations</i>	Calculations <i>Multifamily 1</i>
36	NEC Wiring & Protection <i>Overcurrent Protection</i>	NEC Wiring Methods <i>Metal & Nonmetallic Wireways</i>	Blueprint Reading Part 6 <i>Hazardous Locations</i>	Calculations <i>Multifamily 2</i>
37	3 rd Quarter Review	NEC Wiring Methods <i>Surface Raceways</i>	Blueprint Reading Part 7 <i>Final Exam</i>	3 rd Quarter Review
38	3 rd Quarter Final Exam	NEC Wiring Methods <i>Multioutlet Assembly & Cable Trays</i>	Motor Control 1 <i>Intro to Motor Controls</i>	3 rd Quarter Final Exam
39	Blueprint Reading Part 1 <i>Print Reading</i>	Blueprint Reading Part 3 <i>Multifamily Dwellings</i>	Motor Control 2 <i>Motor Controls & Schematics</i>	Calculations <i>Commercial 1</i>
40	Blueprint Reading Part 2 <i>One-Family Dwellings</i>	Blueprint Reading Part 4 <i>Commercial Locations</i>	Motor Control 3 <i>Motor Controls & Schematics</i>	Calculations <i>Commercial 2</i>

Class Training Schedule

Class	First Year Students	Second Year Students	Third Year Students	Fourth Year Students
41	Practical Application 1 Residential Wiring <i>Device Wiring & Terminations</i>	Practical Application 1 Commercial Wiring <i>Cable & Conduit Fitting Assembly</i>	Motor Control 4 <i>Reversing Controls</i>	Calculations <i>Transformer 1</i>
42	Practical Application 2 Residential Wiring <i>Switching Circuits</i>	Practical Application 2 Commercial Wiring <i>Conduit Bending 1</i>	Motor Control 5 <i>Reversing Controls</i>	Calculations <i>Transformer 2</i>
43	Practical Application 3 Residential Wiring <i>Circuit Layout & Installation 1</i>	Practical Application 3 Commercial Wiring <i>Conduit Bending 2</i>	Motor Control 6 <i>Multiple Motors</i>	4th Quarter Review <i>Review</i>
44	Practical Application 4 First Aid <i>CPR</i>	Practical Application 4 Commercial Wiring <i>Conduit Bending 3 & Conductor Installation</i>	Practical Application	Final Exam Simulated Journeyman's Exam 1 <i>Theory</i>
45	4th Quarter Review <i>Review</i>	4th Quarter Review <i>Review</i>	4th Quarter Review <i>Review</i>	Final Exam Simulated Journeyman's Exam 2 <i>NEC Code</i>
46	4th Quarter <i>Final Exam</i>	4th Quarter <i>Final Exam</i>	4th Quarter <i>Final Exam</i>	Final Exam Simulated Journeyman's Exam 3 <i>Calculations</i>
47	4th Quarter <i>Exam Review</i>	4th Quarter <i>Exam Review</i>	4th Quarter <i>Exam Review</i>	4th Quarter <i>Exam Review</i>