

ELECTRICIAN (HOUSEWIRE OR RESIDENTIAL)

APPENDIX A

O*NET CODE 47-2111.00

This training outline is a minimum standard for Work Processes and Related Instruction. Changes in technology and regulations may result in the need for additional on-the-job or classroom training.

WORK PROCESSES

	Approximate Hours
A. Project Layout and Planning	200
1. Reading and interpreting blueprints and specifications.	
2. Coordination between crafts, general contractor and home owner.	
3. Laying out services and branch circuits.	
B. Underground Installations	200
1. Trenching and ditch digging (if in keeping with prevailing area practice.)	
2. Direct burial	
3. Installing PVC/rigid conduit (including bender usage)	
4. Installing grounding electrode systems.	
C. Thinwall Conduit Raceway Systems	200
1. Selecting and installing fastening and support devices.	
2. Conduit fabrication	
3. Installation of conduit, fittings and boxes	
D. Rigid Conduit Raceway Systems	200
1. Selecting and installing fastening and supporting devices	
2. Conduit fabrication	
3. Installation of conduit, fittings and boxes	
E. Installing Services and Panels	500
1. Mounting devices	
2. Breaker installation	
3. Fuse installation	

4. Terminations and Bonding	
F. Installing, Splicing and Terminating Wires and Cables	1,200
1. Installing non-metallic Sheath cable	
2. Establishing temporary power	
3. Installing feeders and branch circuits	
4. Installing control wiring	
5. Performing splices, taps and terminations	
G. Lighting System Installation	400
1. Installing outlet boxes and conductors.	
2. Installing fixtures and lamps.	
3. Installing control devices.	
H. Testing and Troubleshooting Feeders, Motors and Branch Circuits	100
1. Checking circuit continuity.	
2. Identifying fault current to ground.	
3. Certifying system operation.	
4. Repair and maintenance.	
5. Ground verification.	
I. Fire Alarm Installation (optional*)	100
The employer(s) for whom the apprentice or journeyman is working must possess a valid Alarm Installer license, issued by the New York State Department of State. In addition, the apprentice/journeyman performing such work must be fingerprinted, as required by the Department of State.	
1. Interpreting blueprints and specifications.	
2. Layout and circuit installation.	
3. Control panel and device installation.	
4. Programming and testing.	
J. Control System Installation	150
1. Blueprint and specification interpretation.	
2. Layout and circuit installation.	
3. Installing and certifying distributed control system.	

K. Security System Installation (optional*) **100**

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1. Interpreting blueprints and specifications.
2. Layout.
3. Box and circuit installation.
4. Terminations.
5. Testing.

L. Installing Sound and Communication Systems **150**

1. Blueprint and specification interpretation.
2. Layout.
3. Conduit and box installation.
4. Installing panels and network devices.
5. Circuit installation.
6. Terminating and testing circuits.

M. Installing and Terminating Transformers **100**

1. Rigging and mounting (if in keeping with prevailing area practice).
2. Terminating primary and secondary cables.
3. Testing and troubleshooting.

N. Installing Specialized Systems **800**

1. Installing basic life safety technology
2. Designing custom and low-voltage controls.
3. Installing entertainment and environmental designs.

O. Service and Troubleshooting **100**

Testing, analysis and repair of electrical/electronic components of: motors, transformers, electrical devices, electronic devices, magnetic devices, lighting and power circuits, equipment and machinery, control circuits and devices.

P. Material Handling and Pre-Fabrication	100
1. Awareness of materials and equipment of the trade.	
2. Handling materials of the trade (if in keeping with prevailing area practice.)	
3. Fabrication for field installation	
Q. Safety Awareness, Processing Required Paperwork and Other Specialized Areas	200

Approximate Total Hours (over a three-year period)	4,800
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*If optional work processes are not selected, the hours should be devoted to further mastery of the required work processes.

Apprenticeship work processes are applicable only to training curricula for apprentices in approved programs. Apprenticeship work processes have no impact on classification determinations under Article 8 or 9 of the Labor Law. For guidance regarding classification for purposes of Article 8 or 9 of the Labor Law, please refer to <https://dol.ny.gov/public-work-and-prevailing-wage>

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APPENDIX B

RELATED INSTRUCTION

Safety

1. Safety and Health Awareness
2. OSHA/Safety Awareness (including fall-protection and confined space training)
3. Asbestos Awareness – minimum 4 hours (see attached)
4. First Aid (minimum 6.5 hours every 3 years)
5. Sexual Harassment Prevention Training – must comply with section 201-g of the Labor Law

Blueprints

1. Blueprint Reading and Sketching
2. CAD (optional)

Mathematics

1. Algebra
2. Geometry
3. Trigonometry
4. Trade Math
5. Estimating (optional)

Trade Theory

1. Electrical Theory

Trade Science

1. Basic Tools and Equipment
2. National Electrical Code
3. State and Local Electrical Codes
4. Conduit Fabrication
5. Transformers
6. Electrical Grounding
7. Electronics
8. Motors
9. Digital Electronics

10. Fiber Optics
11. Motor Control
12. Distributed Control
13. Intelligent Wiring Systems
14. Local Area Network Systems
15. Low Voltage Systems
16. Programmable Controllers
17. Telecommunications
18. Fire Alarm and Security Systems (if Work Process “L” and “Q” are selected)
 - a. Installations: Standards, Codes and Techniques,
 - b. Control Panels and Alarm Transmissions,
 - c. Security Systems and Fire Technology
19. Systems Analysis, Repair and Certification
20. Branch Current Distribution
21. Video Distribution
22. Sound Systems
23. Entertainment Systems
24. Solar power Generation
25. Telphony
26. Remote Control Wiring
27. Overcurrent Protection
28. Air Conditioning
29. Instrumentation
30. Process Control
31. Service and Troubleshooting
32. Customer Service
33. Workmanship
34. Communication Skills

Industrial and Labor Relations

1. History and Background
2. Current Laws and Practices

A Minimum of 160 Hours of Related Instruction are Required for Each Apprentice for Each of the Three Years. This Results in a Total of at Least 480 Hours.

Appendix B topics are approved by New York State Education Department.

ATTACHMENT TO APPENDIX B

Asbestos Awareness

This course must be delivered by one of the following:

1. A provider currently approved by the New York State Department of Health to deliver asbestos safety training.
2. A person holding a current Asbestos Handler certificate from the New York State Department of Labor in the title of: Inspector, Supervisor, Project Monitor, Management Planner, or Project Designer.
3. Anyone otherwise approved by the New York State Education Department.

Minimum course contents must include the following:

1. Definition of asbestos
2. Types and physical characteristics
3. Uses and applications
4. Health effects:
 - a. Asbestos-related diseases
 - b. Risks to families
 - c. Cigarette smoking
 - d. Lack of safe exposure level
5. Employer-specific procedures to follow in case of potential exposure, including making a supervisor or building owner immediately aware of any suspected incidental asbestos disturbance so that proper containment and abatement procedures can be initiated promptly.

Notwithstanding the above course requirement, employers are advised that they must also be in compliance with New York State Department of Labor Industrial Code Rule 56 at all times.

Employers are further advised, and must advise all apprentices, that completion of the above course requirement does not authorize any person to remove, encapsulate, enclose, repair, disturb, or abate in any manner, any friable or non-friable asbestos, asbestos containing material, presumed asbestos containing material, or suspect miscellaneous asbestos containing material.