

# ELECTRICIAN/3: WIRING TECHNIQUES (240 Hours)

Course No.: 72-75-60

## COMPETENCY CHECKLIST

Student Name \_\_\_\_\_

Teacher Name \_\_\_\_\_ School Site \_\_\_\_\_

Start Date \_\_\_\_\_ Completion Date \_\_\_\_\_ Certificate Date \_\_\_\_\_

Teacher Signature \_\_\_\_\_ Student Signature \_\_\_\_\_

(Signatures verify completion of course competencies)

### A. WORKPLACE SAFETY (10 hrs)

- \_\_\_\_\_ 1. OSHA safety standards for electricians
- \_\_\_\_\_ 2. Locations of all emergency "stop" switches
- \_\_\_\_\_ 3. Escape route in the event of an earthquake
- \_\_\_\_\_ 4. Specific first aid practices for electricians
- \_\_\_\_\_ 5. Safety test

### B. BASIC ELECTRICAL TEST EQUIPMENT (40 hrs)

- \_\_\_\_\_ 1. Discuss basic meter theory
- \_\_\_\_\_ 2. Identify various instrumentations
- \_\_\_\_\_ 3. Features/functions of listed instrumentation
- \_\_\_\_\_ 4. Proper use of instrumentation
- \_\_\_\_\_ 5. Proper storing & maintaining of instruments
- \_\_\_\_\_ 6. Wheatstone bridges vs. meggers
- \_\_\_\_\_ 7. Define frequency as it applies to AC
- \_\_\_\_\_ 8. Power meters vs. power factor meters
- \_\_\_\_\_ 9. Principle of analog meter movements
- \_\_\_\_\_ 10. Demo accurate readings on analog reader
- \_\_\_\_\_ 11. Digital and analog instruments
- \_\_\_\_\_ 12. Proper procedures for meter and range
- \_\_\_\_\_ 13. Features/functions of specialty instruments
- \_\_\_\_\_ 14. Features/functions of volt-/am-/ohmmeter
- \_\_\_\_\_ 15. Testing procedures w/volt-/am-/ohmmeter
- \_\_\_\_\_ 16. Proper testing procedures for cables
- \_\_\_\_\_ 17. Maintenance testing for generators
- \_\_\_\_\_ 18. Insulation test procedures for a megohmmeter
- \_\_\_\_\_ 19. High voltage cable and insulators
- \_\_\_\_\_ 20. Proper method to check insulation integrity
- \_\_\_\_\_ 21. Special requirements for high voltage testing
- \_\_\_\_\_ 22. Use of 'no contact' voltage indicators
- \_\_\_\_\_ 23. Appropriate tests used for instrumentation
- \_\_\_\_\_ 24. Appropriate methods used for instrumentation
- \_\_\_\_\_ 25. Appropriate voltages used for instrumentation
- \_\_\_\_\_ 26. Appropriate equipment for instrumentation

### C. WIRE COLOR CONNECTIONS (10 hrs)

- \_\_\_\_\_ 1. Proper color coding for single-phase circuits
- \_\_\_\_\_ 2. Proper color coding for single-phase coding
- \_\_\_\_\_ 3. Conductor for ground/120 & 277 volt circuits
- \_\_\_\_\_ 4. Conductor for neutral /120 & 277 volt circuits
- \_\_\_\_\_ 5. Standard practice of identifying switch legs

### D. WIRING TECHNIQUES (150 hrs)

- \_\_\_\_\_ 1. Discuss the use of cords
- \_\_\_\_\_ 2. Discuss the use of non-metallic sheathed cable
- \_\_\_\_\_ 3. Demonstrate the proper use of building wire
- \_\_\_\_\_ 4. Describe proper fill of conduit
- \_\_\_\_\_ 5. Describe proper number of wires in a circuit
- \_\_\_\_\_ 6. Proper procedure for calculating list items
- \_\_\_\_\_ 7. One-line diagram for various project types
- \_\_\_\_\_ 8. Use schematics to describe nominal voltages
- \_\_\_\_\_ 9. Features/functions of wiring components
- \_\_\_\_\_ 10. Describe the construction of wire
- \_\_\_\_\_ 11. Explain what is meant by sizing capacities
- \_\_\_\_\_ 12. Components of various types of wiring
- \_\_\_\_\_ 13. Selecting wires according to planned use
- \_\_\_\_\_ 14. Splices, connections, & solder-less connections
- \_\_\_\_\_ 15. Installation of basic electrical boxes & conduits
- \_\_\_\_\_ 16. Demo wiring basic commercial type circuits

### E. BLUEPRINT READING (30 hrs)

- \_\_\_\_\_ 1. Identify use of various information blocks
- \_\_\_\_\_ 2. Explain what is meant by views or projections
- \_\_\_\_\_ 3. Identify types of lines used in blueprints
- \_\_\_\_\_ 4. Fractional/decimal/angular applied to dimensions
- \_\_\_\_\_ 5. Fractional/decimal/angular applied to tolerance
- \_\_\_\_\_ 6. Symbols/abbreviations used in blueprints
- \_\_\_\_\_ 7. Demo accurate use of architectural prints
- \_\_\_\_\_ 8. Creation of blueprints, plans, & specifications
- \_\_\_\_\_ 9. Symbols used in electrical & related trades
- \_\_\_\_\_ 10. Functions of basic line types

- \_\_\_ 11. Identify drawing tools and techniques
- \_\_\_ 12. Recognize/apply dimensions to drawings
- \_\_\_ 13. Prepare 'as built' drawings
- \_\_\_ 14. Features/functions of various diagrams
- \_\_\_ 15. Use of blueprint specifications
- \_\_\_ 16. Functions of various blueprint components