

# Electricity I Course Competencies

## **Demonstrating Workplace Readiness Skills: Personal Qualities and People Skills**

1. Demonstrate positive work ethic.
2. Demonstrate integrity.
3. Demonstrate teamwork skills.
4. Demonstrate self-representation skills.
5. Demonstrate diversity awareness.
6. Demonstrate conflict-resolution skills.
7. Demonstrate creativity and resourcefulness.

## **Demonstrating Workplace Readiness Skills: Professional Knowledge and Skills**

8. Demonstrate effective speaking and listening skills.
9. Demonstrate effective reading and writing skills.
10. Demonstrate critical-thinking and problem-solving skills.
11. Demonstrate healthy behaviors and safety skills.
12. Demonstrate an understanding of workplace organizations, systems, and climates.
13. Demonstrate lifelong-learning skills.
14. Demonstrate job-acquisition and advancement skills.
15. Demonstrate time-, task-, and resource-management skills.
16. Demonstrate job-specific mathematics skills.
17. Demonstrate customer-service skills.

## **Demonstrating Workplace Readiness Skills: Technology Knowledge and Skills**

18. Demonstrate proficiency with technologies common to a specific occupation.
19. Demonstrate information technology skills.
20. Demonstrate an understanding of Internet use and security issues.
21. Demonstrate telecommunications skills.

## **Examining All Aspects of an Industry**

22. Examine aspects of planning within an industry/organization.
23. Examine aspects of management within an industry/organization.
24. Examine aspects of financial responsibility within an industry/organization.
25. Examine technical and production skills required of workers within an industry/organization.
26. Examine principles of technology that underlie an industry/organization.
27. Examine labor issues related to an industry/organization.
28. Examine community issues related to an industry/organization.
29. Examine health, safety, and environmental issues related to an industry/organization.

## **Addressing Elements of Student Life**

30. Identify the purposes and goals of the student organization.
31. Explain the benefits and responsibilities of membership in the student organization as a student and in professional/civic organizations as an adult.
32. Demonstrate leadership skills through participation in student organization activities, such as meetings, programs, and projects.
33. Identify Internet safety issues and procedures for complying with acceptable use standards.

## **Applying Basic Construction Safety Standards (Core Safety)**

34. Comply with federal, state, and local safety legal requirements, including OSHA, VOSHA, and EPA.
35. Inspect and maintain a safe working environment.
36. Explain safe working practices around electrical hazards.
37. Identify emergency first aid procedures.
38. Identify the types of fires and the methods used to extinguish them.
39. Identify PPE (personal protective equipment) requirements.
40. Inspect course-specific hand and power tools to visually identify defects.
41. Demonstrate lifting and carrying techniques.
42. Demonstrate safe laddering techniques.
43. Demonstrate safe scaffolding techniques.
44. Report injuries.
45. Report personal, environmental, and equipment safety violations to the appropriate authority.
46. Earn the OSHA 10 card.
47. Pass safety exam.

### **Focusing on the Electrician's Profession**

48. Identify electrician-specific safety issues.
49. Demonstrate lockout/tagout procedures.
50. Discuss current topics in the industry.
51. Explore the various occupations available in electricity and related fields.
52. Investigate career opportunities in the electrical industry.
53. Discuss all postsecondary training and licensing in the electricity field.
54. Describe the employee's role in ensuring the success of the electrical business.
55. Identify national and local trade organizations.

### **Using Tools and Materials**

56. Identify and use the various types of hand tools used by electricians.
57. Identify and use the various types of power tools used by electricians.
58. Identify commonly used materials by name and by regional variance of terminology.
59. Maintain a material inventory.

### **Applying Basic Electrical Theory**

60. Explain basic electrical theory.
61. Explain the relationship of electron theory to circuit design by the use of Ohm's Law.
62. Use a variety of meters to take readings.
63. Wire series circuit.
64. Wire parallel circuits.

### **Solving Mathematical Problems**

65. Solve word problems involving whole numbers, fractions, and decimals.
66. Solve algebraic formulas pertaining to electrical applications.
67. Solve problems involving percentage, ratio, and proportion.
68. Measure distances using scales and measuring devices.

### **Interpreting Prints and Specifications**

69. Draw electrical circuits.
70. Read electrical construction drawings and specifications.

### **Navigating the National Electrical Code (NEC) Book**

71. Explain the intent of the NEC.

72. Interpret the NEC requirements for electrical installation.

**Selecting and Installing Conductors**

73. Identify various types of conductors and their associated applications.

74. Install conductors.

75. Terminate conductors with lugs, connectors, and terminals.

**Identifying and Installing Panelboards and Switchboards**

76. Identify purpose and location of overcurrent devices and service entrance equipment.

**Describing Generators and Power Supplies**

77. Explain principles of generating electricity.

**Exploring Environmentally Friendly Choices**

78. Identify energy-efficient equipment and methods.

79. Determine the environmental impacts of land use and site location for a proposed building project.

80. Describe design choices for a proposed building project that reflect conservation and efficient use of materials.

81. Describe design choices for a proposed building project that reflect conservation and efficient use of energy.

82. Describe design choices for a proposed building project that reflect conservation and efficient use of water.

83. Describe design choices that can affect indoor air quality for proposed building projects.