Electricity II 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. Inspect course-specific hand and power tools to visually identify defects.
38. Report injuries.
39. Report personal, environmental, and equipment safety violations to the appropriate authority.
40. Pass safety exam.

Focusing on the Electrician's Profession

41. Demonstrate lockout/tagout procedures.
42. Discuss current topics in the industry.
43. Investigate career opportunities in the electrical industry.
44. Discuss all postsecondary training and licensing in the electricity field.

Using Tools and Materials

45. Identify and use the various types of hand tools used by electricians.
46. Identify and use the various types of power tools used by electricians.
47. Identify commonly used materials by name and by regional variance of terminology.
48. Maintain a material inventory.

Solving Mathematical Problems Related to Electricity

49. Solve word problems involving whole numbers, fractions, and decimals.
50. Solve algebraic formulas pertaining to electrical applications.
51. Solve problems involving percentage, ratio, and proportion.
52. Solve problems using direct and inverse relationships.
53. Measure distances using scales and measuring devices.
54. Use calculators to solve electrical problems.

Applying Basic Electrical Theory

55. Use a variety of meters to take readings.
56. Calculate series circuits.
57. Troubleshoot series circuit.
58. Calculate parallel circuits.
59. Troubleshoot parallel circuits.
60. Wire series-parallel (combination) circuits.
61. Calculate series-parallel (combination) circuits.
62. Troubleshoot series-parallel (combination) circuit.
63. Explain principles of magnetism/electromagnetism.
64. Explain the nameplate specifications related to motors, generators, and transformers.

Interpreting Prints and Specifications

65. Draw electrical circuits.
66. Read electrical construction drawings and specifications.

Navigating the National Electrical Code (NEC) Book

67. Interpret the NEC requirements for electrical installation.

Selecting and Installing Conductors

68. Identify various types of conductors and their associated applications.
69. Install conductors.
70. Terminate conductors with lugs, connectors, and terminals.

Identifying and Installing Conduit and Raceways

71. Identify various conduits and raceways.
72. Select material and wiring support systems.
73. Bend and install conduit.

Examining Lighting Systems

74. Install and connect fixtures.
75. Explain functions, operation, and characteristics of single-phase power systems.
76. Install and connect power devices.

Identifying and Installing Panelboards and Switchboards

77. Install service entrance equipment.
78. Select overcurrent protection devices (OCPD).
79. Install overcurrent devices.
80. Identify/install various ground fault circuit interrupter (GFCI) and arc fault devices.

Identifying and Installing Grounding Systems

81. Identify characteristics of grounding systems.
82. Demonstrate sizing, layout, and installation of grounding systems.

Describing Generators and Power Supplies

83. Apply principles of generating electricity.

Installing Transformers

84. Install transformers.

Exploring Environmentally Friendly Choices

85. Determine the environmental impacts of land use and site location for a proposed building project.
86. Describe design choices for a proposed building project that reflect conservation and efficient use of materials.
87. Describe design choices for a proposed building project that reflect conservation and efficient use of energy.
88. Describe design choices for a proposed building project that reflect conservation and efficient use of water.
89. Describe design choices that can affect indoor air quality for proposed building projects.