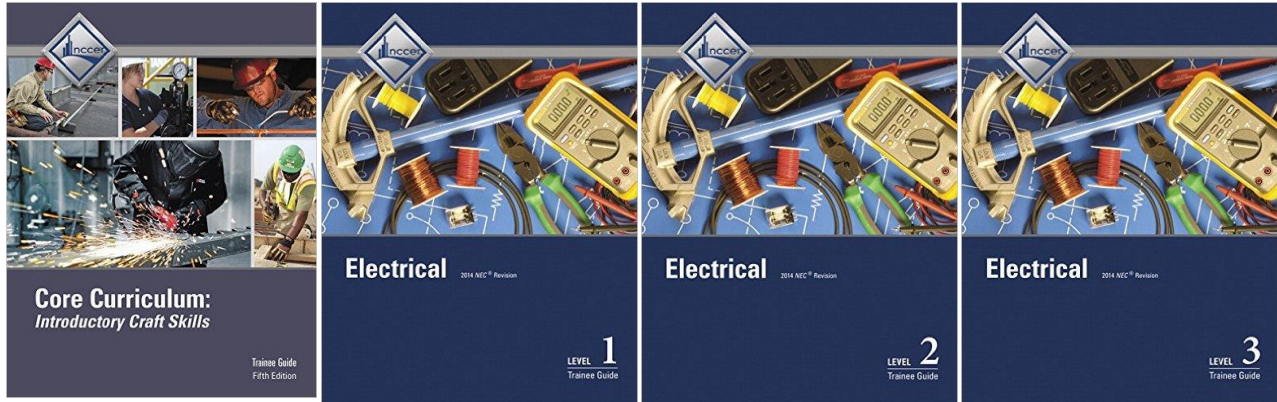


**A Correlation of**



**Core Curriculum**

**Electrical 1**

**Electrical 2**

**Electrical 3**

To the

**Utah Building Trades**

**Electrician I**

**Course Standards and Objectives**

**A Correlation of Core Curriculum 5e, ©2016, Electrical Level 1 8e, ©2014,  
Electrical Level 2 8e, ©2014, and Electrical Level 3 8e, ©2014  
to the Utah Building Trades Course Standards for Electrician 1**

**Resource Title:** *Core Curriculum: Introductory Craft Skills, Fifth Edition*

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**Author:** NCCER

**Copyright:** 2016

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**Core Subject Area:** Electrician

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| <b>Utah Building Trades<br/>Electrician 1</b>  | <b>Core Curriculum 5e, ©2016<br/>Electrical Level 1 8e ©2014<br/>Electrical Level 2 8e ©2014<br/>Electrical Level 3 8e ©2014</b>   |
| <b>CORE STANDARDS, OBJECTIVES, AND INDICATORS</b>  |  |
| <b>STANDARD 1</b>  |  |
| <b>Students will be able to understand electrical safety.</b>  |  |
| <b>Objective 1:</b> Demonstrate safe working procedures in a construction environment.   | <b>Core Curriculum SE:</b> M1.1-86<br><b>Electrical Level 1 SE:</b> 2.1-36<br><b>Electrical Level 2 SE:</b> 6.11, 6.15, 10.20<br><b>Electrical Level 3 SE:</b> 4.8, 8.2  |
| <b>Objective 2:</b> Explain the purpose of OSHA and how it promotes safety on the job.   | <b>Core Curriculum SE:</b> M1.3, M1.94-96<br><b>Electrical Level 1 SE:</b> 1.12-13, 2.10<br><b>Electrical Level 2 SE:</b> 9.8, 10.10-11  |
| <b>Objective 3:</b> Identify electrical hazards and how to avoid or minimize them in the workplace.  | <b>Core Curriculum SE:</b> M1.50-54<br><b>Electrical Level 1 SE:</b> 2.1-10, 2.11-16<br><b>Electrical Level 2 SE:</b> 3.23, 3.32, 10.8<br><b>Electrical Level 3 SE:</b> 4.8, 6.23  |
| <b>Objective 4:</b> Explain safety issues concerning lockout/tagout procedures, personal protection using assured grounding and isolation programs, confirm space entry and fall protection systems. | <b>Core Curriculum SE:</b> M1.51-52, M1.54-57, M1.59-63, M1.84-86<br><b>Electrical Level 1 SE:</b> 2.4-10, 2.14-17, 2.26-27, 2.31-36<br><b>Electrical Level 2 SE:</b> 3.37, 3.39, 9.16, 10.20<br><b>Electrical Level 3 SE:</b> 5.30, 8.2 |
| <b>STANDARD 2</b>  |  |
| <b>Students will be able to understand hand bending.</b>   |  |
| <b>Objective 1:</b> Identify the methods of hand bending conduit.  | <b>Electrical Level 1 SE:</b> 7.1-3<br><b>Electrical Level 2 SE:</b> 4.10  |
| <b>Objective 2:</b> Identify the various methods used to install conduit.  | <b>Electrical Level 1 SE:</b> 7.12-17<br><b>Electrical Level 2 SE:</b> 4.10  |
| <b>Objective 3:</b> Use math formulas to determine conduit bends.  | <b>Electrical Level 1 SE:</b> 7.2-11<br><b>Electrical Level 2 SE:</b> 4.5-10   |
| <b>Objective 4:</b> Mark 90° bends, back-to-back bends, offsets, kicks, and saddle bends using a hand bender.  | <b>Electrical Level 1 SE:</b> 7.4-12<br><b>Electrical Level 2 SE:</b> 4.3-4  |

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|---|--|
| <b>Utah Building Trades<br/>Electrician 1</b>   | <b>Core Curriculum 5e, ©2016<br/>Electrical Level 1 8e ©2014<br/>Electrical Level 2 8e ©2014<br/>Electrical Level 3 8e ©2014</b> |
| <b>STANDARD 3</b>   |  |
| <b>Students will be able to understand electrical theory I.</b>   |  |
| <b>Objective 1:</b> Recognize what atoms are and how they are constructed.                                  | <b>Electrical Level 1 SE:</b> 3.1-2  |
| <b>Objective 2:</b> Define voltage and identify the ways in which it can be produced.                       | <b>Electrical Level 1 SE:</b> 3.5-7  |
| <b>Objective 3:</b> Explain the difference between conductors and insulators.                               | <b>Electrical Level 1 SE:</b> 3.2-3  |
| <b>Objective 4:</b> Define the units of measurement that are used to measure the properties of electricity. | <b>Electrical Level 1 SE:</b> 3.6-7  |
| <b>Objective 5:</b> Explain how voltage, current, and resistance are related to each other.                 | <b>Electrical Level 1 SE:</b> 3.7-8  |
| <b>Objective 6:</b> Using the formula for Ohm's Law, calculate an unknown value.                            | <b>Electrical Level 1 SE:</b> 3.8-9, 4.6<br><b>Electrical Level 2 SE:</b> 1.44<br><b>Electrical Level 3 SE:</b> 7.30             |
| <b>Objective 7:</b> Explain the different types of meters used to measure voltage, current, and resistance. | <b>Electrical Level 1 SE:</b> 3.15-19  |
| <b>Objective 8:</b> Using the power formula, calculate the amount of power used by a circuit.               | <b>Electrical Level 1 SE:</b> 3.19-22<br><b>Electrical Level 2 SE:</b> 1.30  |
| <b>STANDARD 4</b>   |  |
| <b>Students will be able to understand electrical test equipment.</b>                                       |  |
| <b>Objective 1:</b> Explain the operation of and describe the following pieces of test equipment:           |  |
| a. Ammeter  | <b>Electrical Level 1 SE:</b> 3.15-16, 12.5  |
| b. Volt meter   | <b>Electrical Level 1 SE:</b> 3.16, 12.2   |
| c. Ohm meter  | <b>Electrical Level 1 SE:</b> 3.16-17, 12.3-5<br><b>Electrical Level 2 SE:</b> 9.25  |
| d. Continuity tester  | <b>Electrical Level 1 SE:</b> 3.17, 12.4   |
| e. Voltage tester   | <b>Electrical Level 1 SE:</b> 3.17, 3.19, 12.2-3   |
| <b>Objective 2:</b> Explain the importance of proper meter polarity   | <b>Electrical Level 1 SE:</b> 3.19, 4.11   |

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| <b>Objective 3:</b> Explain the difference between digital and analog meters.  | <b>Electrical Level 1 SE:</b> 12.2, 12.6   |
| <b>STANDARD 5</b>  |  |
| <b>Students will be able to understand Introduction to the National Electrical Code.</b>   |  |
| <b>Objective 1:</b> Explain the purpose and history of the National Electrical Code (NEC).   | <b>Electrical Level 1 SE:</b> 5.1-3  |
| <b>Objective 2:</b> Describe the layout of the NEC.  | <b>Electrical Level 1 SE:</b> 5.3-6  |
| <b>Objective 3:</b> Explain how to navigate the NEC.   | <b>Electrical Level 1 SE:</b> 5.6-11<br><b>Electrical Level 3 SE:</b> 8.8  |
| <b>Objective 4:</b> Describe the purpose of the National Electrical Manufacturers' Association (NEMA) and the National Fire Protection Association (NFPA). | <b>Electrical Level 1 SE:</b> 5.2-3, 5.11-13<br><b>Electrical Level 2 SE:</b> 2.48, 5.2<br><b>Electrical Level 3 SE:</b> 6.7, 11.14, 11.55 |
| <b>Objective 5:</b> Explain the role of testing laboratories.  | <b>Electrical Level 1 SE:</b> 5.11<br><b>Electrical Level 2 SE:</b> 9.8, 10.6<br><b>Electrical Level 3 SE:</b> 5.36, 7.5, 9.18, 11.55      |
| <b>STANDARD 6</b>  |  |
| <b>Students will be able to understand raceways, boxes and fittings.</b>   |  |
| <b>Objective 1:</b> Identify and select various types of sizes and raceways.   | <b>Electrical Level 1 SE:</b> 8.1-8<br><b>Electrical Level 2 SE:</b> 5.4-5   |
| <b>Objective 2:</b> Identify and select various types of raceway fittings.   | <b>Electrical Level 1 SE:</b> 8.8-12, 8.13<br><b>Electrical Level 2 SE:</b> 5.10-14  |
| <b>Objective 3:</b> Identify various methods used to install raceways.   | <b>Electrical Level 1 SE:</b> 8.12-28, 8.29-30, 8.31-40, 8.40-43<br><b>Electrical Level 2 SE:</b> 6.1-2, 6.6                               |
| <b>Objective 4:</b> Demonstrate knowledge of NEC raceway requirements.   | <b>Electrical Level 1 SE:</b> 8.1-9, 8.13, 8.29-31<br><b>Electrical Level 2 SE:</b> 7.15   |
| <b>Objective 5:</b> Describe procedures for installing raceways and boxes in a wood frame environment.   | <b>Electrical Level 1 SE:</b> 8.16-17, 8.19  |
| <b>Objective 6:</b> Describe procedures for installing raceways and boxes on drywall surfaces.   | <b>Electrical Level 1 SE:</b> 8.19, 8.26-27  |

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| <b>Objective 7:</b> Recognize safety precautions that must be followed when working with boxes and raceways.       | <b>Electrical Level 1 SE:</b> 8.1, 8.13, 8.43-44<br><b>Electrical Level 2 SE:</b> 6.11, 6.15                                     |
| <b>STANDARD 7</b>  |  |
| <b>Students will be able to understand conductors.</b>   |  |
| <b>Objective 1:</b> Explain the various sizes and gauges of wire in accordance with American Wire Gauge standards. | <b>Electrical Level 1 SE:</b> 9.1-2<br><b>Electrical Level 3 SE:</b> 2.1   |
| <b>Objective 2:</b> Identify insulation and jacket types according to conditions and applications.                 | <b>Electrical Level 1 SE:</b> 9.3-4<br><b>Electrical Level 2 SE:</b> 8.10  |
| <b>Objective 3:</b> Describe voltage ratings of conductors and cables.   | <b>Electrical Level 1 SE:</b> 9.5-6  |
| <b>Objective 4:</b> Read and identify markings on conductors and cables.   | <b>Electrical Level 1 SE:</b> 9.4-6, 9.7-10  |
| <b>Objective 5:</b> Use the tables in the NEC to determine the ampacity of a conductor.                            | <b>Electrical Level 1 SE:</b> 9.2-3<br><b>Electrical Level 2 SE:</b> 7.20, 9.9   |
| <b>Objective 6:</b> State the purpose of stranded wire.  | <b>Electrical Level 1 SE:</b> 9.2, 9.11<br><b>Electrical Level 3 SE:</b> 2.1   |
| <b>Objective 7:</b> Describe the different materials from which conductors are made.                               | <b>Electrical Level 1 SE:</b> 9.3  |
| <b>Objective 8:</b> Describe the different types of conductor insulation.  | <b>Electrical Level 1 SE:</b> 9.3-4  |
| <b>Objective 9:</b> Describe the color coding of insulation.   | <b>Electrical Level 1 SE:</b> 9.5-6<br><b>Electrical Level 2 SE:</b> 8.11-12<br><b>Electrical Level 3 SE:</b> 2.11, 2.22         |
| <b>Objective 10:</b> Describe the procedure for pulling wire through conduit.                                      | <b>Electrical Level 1 SE:</b> 9.16-18<br><b>Electrical Level 2 SE:</b> 6.5-17  |
| <b>Objective 11:</b> Install conductors in conduit.  | <b>Electrical Level 1 SE:</b> 9.14-19<br><b>Electrical Level 2 SE:</b> 6.6-9   |
| <b>Objective 12:</b> Pull conductors in a conduit system.  | <b>Electrical Level 1 SE:</b> 9.16-18<br><b>Electrical Level 2 SE:</b> 6.5-17  |

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|---|--|
| <b>STANDARD 8</b>   |  |
| <b>Students will be able to understand boxes and fittings.</b>  |  |
| <b>Objective 1:</b> Describe the different types of nonmetallic and metallic boxes.   | <b>Electrical Level 1 SE:</b> 6.1-12<br><b>Electrical Level 2 SE:</b> 3.28, 5.1-15   |
| <b>Objective 2:</b> Properly locate, install, and support boxes of all types.   | <b>Electrical Level 1 SE:</b> 6.2-10<br><b>Electrical Level 2 SE:</b> 3.28, 5.1-15   |
| <b>Objective 3:</b> Understand the NEC requirements for boxes supporting lighting fixtures.   | <b>Electrical Level 1 SE:</b> 6.2-4<br><b>Electrical Level 2 SE:</b> 3.28-32   |
| <b>Objective 4:</b> Install the different types of fittings used in conjunction with boxes.   | <b>Electrical Level 1 SE:</b> 8.8-13<br><b>Electrical Level 2 SE:</b> 5.10-15  |
| <b>Objective 5:</b> Explain how boxes and fittings are selected and installed.  | <b>Electrical Level 1 SE:</b> 6.1-11, 8.8-13<br><b>Electrical Level 2 SE:</b> 3.28-32, 5.10-15                                   |
| <b>Objective 6:</b> Describe the various types of box supports.   | <b>Electrical Level 1 SE:</b> 6.12<br><b>Electrical Level 2 SE:</b> 3.28-32, 5.1-15  |
| <b>STANDARD 9</b>   |  |
| <b>Students will gain an understanding of being an Electrician as a profession and will develop professional skills for the workplace.</b>            |  |
| <b>Objective 1:</b> As a participating member of the SkillsUSA student organization completes the SkillsUSA Level 1 Professional Development Program. |  |
| a. Complete a self-assessment inventory and identify individual learning styles.  | This SkillsUSA objective falls outside of the program curricula.   |
| b. Discover self-motivation techniques and establish short-term goals.  | <b>Core Curriculum SE:</b> M8.24-27<br><b>Electrical Level 1 SE:</b> 1.10-12   |
| c. Determine individual time-management skills.   | <b>Core Curriculum SE:</b> M8.16-17<br><b>Electrical Level 1 SE:</b> 1.11-12   |
| d. Define future occupations.   | <b>Core Curriculum SE:</b> M8.1-2<br><b>Electrical Level 1 SE:</b> 1.4-8   |
| e. Define awareness of cultural diversity and equity issues.  | <b>Core Curriculum SE:</b> M8.20-22<br><b>Electrical Level 1 SE:</b> 1.12  |
| f. Recognize the benefits of conducting a community service project.  | This SkillsUSA objective falls outside of the program curricula.   |

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|---|--|
| g. Demonstrate effective communication skills with others.  | <b>Core Curriculum SE:</b> M7.1-23<br><b>Electrical Level 1 SE:</b> 1.10-12  |
| h. Participate in a shadowing activity.   | This SkillsUSA objective falls outside of the program curricula.   |
| i. Identify components of an employment portfolio.  | This SkillsUSA objective falls outside of the program curricula.   |
| j. Explore what is ethical in the workplace or school.  | <b>Core Curriculum SE:</b> M8.16-17<br><b>Electrical Level 1 SE:</b> 1.10-12   |
| k. Demonstrate proficiency in program competencies.   | This SkillsUSA objective falls outside of the program curricula.   |
| l. Explore what is ethical in the workplace or school.<br><ul style="list-style-type: none"> <li>• State the SkillsUSA motto.</li> <li>• State the SkillsUSA creed.</li> <li>• Learn the SkillsUSA colors.</li> <li>• Describe the official SkillsUSA dress.</li> <li>• Describe the procedure for becoming a SkillsUSA officer.</li> </ul> | <b>Electrical Level 1 SE:</b> 1.10-12  |
| <b>Objective 2:</b> Understand the use of tools and equipment and how they relate to career opportunities.  | <b>Core Curriculum SE:</b> M8.1-3<br><b>Electrical Level 1 SE:</b> 2.23-26, 3.15-19, 12.2-5<br><b>Electrical Level 2 SE:</b> 6.23, 8.4-5, 8.15 |
| <b>Objective 3:</b> Display a professional attitude toward the instructor and peers.<br>*SkillsUSA PDP requirements -recommended  | This SkillsUSA objective falls outside of the program curricula.   |