**Lesson Information**

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| Lesson: (1 of 3) Control Circuits Length: 90 minutes  Unit: (3 of 3) System Design  Course: Electrical |

**Content Assumptions**

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| Prior to this class, students have taken math and construction drawing classes. |

**Essential Questions**

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| 1. How are control circuits used in residential electrical systems? 2. What factors are considered when selecting conductors for specific applications? |

**Objectives Assessments**

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| After completing this lesson, students will be able to:   1. Select control circuit elements for residential rooms and depict them accurately in wiring diagrams. 2. Select and perform calculations for conductors for given scenarios. | 1. Control circuit diagram — checklist 2. Conductor selection and calculations — rubric |

**Activities/Instruction**

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| **Show and Tell** (30 minutes)  Using samples (as listed in the Materials section), Instructor explains control systems and conductors, including how they work, the different kinds available, where each is best used, how they are depicted in wiring diagrams, and related National Electrical Code® (NEC®) regulations. Students ask questions and take notes.  **Diagram-orama** (20 minutes)  Using their electrical drawings from the previous unit, (see the Materials section), students create new drawings of one room in the residence (may be students’ or Instructor’s choice), including wiring diagrams for control circuit elements in that room.  **Drawing Electricity** (40 minutes)  Using their electrical drawings from the previous unit (see the Materials section), students create new drawings of the service, feeder circuits, and one adjacent room of their sample residence. These drawings are to include all calculations for conductors in the system, as well as written rationales for conductor selections. |

**Materials**

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| For students:   * Electrical drawings for a simple residence (see lesson 3, “Conduit and Raceways,” of previous unit, “System Elements”)   For Instructor:   * Samples of a variety of contactors, relays, and conductors * Copies of the current edition of the National Electrical Code® (NEC®) * [CONTROL CIRCUIT DIAGRAM CHECKLIST] * [CONDUCTOR SELECTION – CALCULATION RUBRIC] |