**Lesson Information**

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| Lesson: (3 of 4) Services Length: 90 minutes  Unit: (1 of 3) Basic Theory and Practice  Course: Electrical |

**Content Assumptions**

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| Prior to this class, students have taken safety and math courses. |

**Essential Questions**

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| 1. How are electrical systems planned for residences? 2. How is electrical safety provided for in residential electrical systems? |

**Objectives Assessments**

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| After completing this lesson, students will be able to:   1. Determine electric service requirements (including grounding, bonding, and service-entrance requirements). 2. Select wiring methods and devices appropriate for a variety of residential electrical situations. | 1. Load calculation sheet — Instructor observation (as electrical load will vary given the sample residence chosen) 2. Residential electrical drawing — rubric |

**Activities/Instruction**

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| **Careful Calculation** (30 minutes)  Instructor distributes sample floor plans for a simple residence and blank copies of a load calculation sheet. Step by step, Instructor explains how service requirements (for general lighting, fixed appliances, and other loads) are calculated for simple residences. Students complete their load calculation sheets. Instructor continues with explanations of grounding, bonding, and service-entrance equipment requirements.  **Specific Selection** (60 minutes)  Using photos or samples (as listed in the Materials section), Instructor continues with explanations of different wiring methods and devices (e.g., outlet boxes, wiring devices, lighting fixtures, ground-fault interruptors, etc.), as well as how to represent each item on an electrical construction drawing. Students flesh out their sample floor plans with wiring and lighting diagrams. |

**Materials**

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| For students:   * Sample floor plans for a simple residence * Blank load calculation sheet   For Instructor:   * Photos or samples of different wiring materials, outlet boxes, etc. * [ELECTRICAL DRAWING RUBRIC] |