

Instructional/Task Analysis

Related Information: What the Student Should Know

Application: What the Student Should Be Able to Do

Unit 1: Blueprint Reading and Load Calculations

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| 1. Terms and definitions | 8. Draw receptacle and lighting outlets on a floor plan |
| 2. Blueprint symbols | |
| 3. Electrical symbols | 9. Determine general lighting loads |
| 4. Types of lines | 10. Determine small appliance and laundry loads |
| 5. Information commonly found in blueprint specifications | 11. Determine total connected load plus total demand load of a dwelling |
| 6. Minimum requirements for residential outlets | 12. Locate required receptacle and lighting outlets on a house plan |
| 7. Calculating circuit loads and voltage drop | |

Unit 2: Service

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| 1. Terms and definitions | 10. Calculate service size and minimum number of circuits |
| 2. Clearances for service drop conductors | |
| 3. Service disconnects | 11. Install an overhead raceway with service entrance conductors to a meter base |
| 4. Facts that should be known before service installation is started | 12. Connect meter base assembly to load center or panel |
| 5. Parts of a service entrance | 13. Install an underground service (lateral) raceway with conductors to a meter base |
| 6. Types of grounding electrodes | 14. Braid the ground conductor of a service entrance cable |
| 7. Grounding electrode conductor installations and sizes | |
| 8. Short circuit protection at service equipment | |
| 9. Surge protection | |

Unit 3: Rough-In

1. Terms and definitions
2. Locations where at least one receptacle outlet is required
3. Planning techniques when placing boxes on plans
4. Accepted heights for boxes in various locations

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Unit 3: Rough-In (continued)

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| 5. Procedure for installing boxes in exterior walls | 11. Rules for electrical installations |
| 6. Box extensions for noncombustible and combustible wall surfaces | 12. List systems that must be installed in a residence prior to installing the finish. |
| 7. Common methods of finding room centers | 13. Locate receptacle, switch, and lighting outlets along a floor line and the ceiling on a blueprint |
| 8. Required outlets | 14. Locate receptacle outlets along kitchen cabinets |
| 9. Locations requiring GFCI protection | 15. Locate receptacle outlets in a bathroom |
| 10. Location requiring AFCI protection | |

Unit 4: Trim Out and Troubleshooting

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| 1. Terms and definitions | 12. List and price lighting fixtures |
| 2. Common residential receptacle types and cover plates | 13. Troubleshoot electrical problems |
| 3. Common residential switch types and cover plates | 14. Wire a receptacle fed from a lighting outlet through a single pole switch |
| 4. Common residential fixture locations | 15. Wire a switch controlled split-wired receptacle |
| 5. Appliance classifications | 16. Wire a receptacle fed from a lighting outlet through a three-way switch |
| 6. Requirements for appliance disconnect means | 17. Wire a four-way switching situation with the supply entering the lighting outlet box |
| 7. Grounding requirements for appliances | 18. Mount a fan box according to manufacturer's recommendations |
| 8. Parts of a duplex grounding type receptacle | 19. Install a range or dryer receptacle |
| 9. Parts of an equipment grounding system | 20. Connect a supply cord to a free standing range or dryer |
| 10. Steps for panel trim out | 21. Install a fixed appliance equipped with a pigtail to a branch circuit |
| 11. Troubleshooting procedures | 22. Install a multi-circuit split-wired duplex grounding type receptacle |
| | 23. Install a fusible safety switch for an air-conditioning condenser |

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Unit 5: Low Voltage Wiring

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| 1. Terms and definitions | 13. List licensing requirements for low voltage wiring systems |
| 2. Requirements of low voltage lighting systems | 14. List uses of low voltage cable |
| 3. Parts of a low voltage lighting system | 15. Draw a wiring diagram indicating the proper connections for a single smoke detector and interconnecting smoke detectors |
| 4. Process that takes place during a low voltage lighting circuit off/on cycle | 16. Wire a two-button chime circuit |
| 5. Components and operation of a door bell chime circuit | 17. Wire two interconnecting telephone wall jacks |
| 6. Manual fan switching circuit | 18. Wire two interconnecting smoke detectors |
| 7. Thermostat system switch in the cool position and the fan switch on auto | |
| 8. Thermostat system switch in the heat position and the fan switch on auto | |
| 9. Anticipator circuits on low voltage thermostats | |
| 10. Communication circuits and their characteristics | |
| 11. Smoke and fire alarm systems | |
| 12. Garage door opener operation | |

Unit 6: Home Automation

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| 1. Terms and definitions | 8. Answer questions related to home automation |
| 2. Definition of home automation | |
| 3. Operation of an automated home | |
| 4. Components of a home automation system | |
| 5. Types of cable used in home automation | |
| 6. Types of controllers | |
| 7. Special tools used in home automation | |