Lesson Plan

**Course Title:** Construction Technology  
**Session Title:** Electrician’s Tools Of The Trade

**Performance Objective:**  
Upon completion of this assignment, the student will be able to identify, use, and care for basic hand tools used in the electrical trades.

**Specific Objectives:**
- Identify the basic hand tools used in the electrical trades.  
- Select the essential tools for each specific job.  
- Maintain and use these tools safely.  
- List factors to consider when purchasing hand tools.

**Preparation**

**TEKS Correlations:**  
This lesson, as published, correlates to the following TEKS. Any changes/alterations to the activities may result in the elimination of any or all of the TEKS listed.

**130.55. Advanced Building Maintenance Technology**

(a) Course recommended for students in grades 10-12 with recommended prerequisite Building Maintenance Technology;

(b) Students will learn knowledge and skills in construction management, architecture, or engineering. Students acquire knowledge and skills in safety, Occupational Safety and Health Administration (OSHA) standards, safety devices in electrical circuits, maintenance of electrical and heating, ventilation, and air conditioning (HVAC) systems, and concepts of historic preservation;

(c) Students will develop knowledge and skills pertaining to employment, safety, interpreting schematics, fuses, circuit breakers, lamps, fixtures, electrical test equipment, HVAC, copper/plastic piping and fittings, conventional and electric thermostats and landscaping.

**Interdisciplinary Correlations:**  
**English:**

- 110.xx(6) – Reading/word identification/vocabulary development  
  **(A)** expand vocabulary development through wide reading, listening, and discussing;

110.xx(6) - Vocabulary Development
- 110.xx(6)(A)  
  ...expand vocabulary through...listening and discussing
110.xx(6)(B)  
...rely on context to determine meanings of words and phrases such as figurative language, idioms, multiple meaning of words, and technical vocabulary...

110.xx(15) – Listening/speaking/critical listening

Instructor/Trainer

References:
1. Modern Residential Wiring: Tools for the Electrician  
2. MAVCC Basic Wiring: Hand Tools Unit 4  
3. Nccer Core Curriculum: Introduction to Hand Tools  
4. DHHS Electrical Safety (NIOSH) Publication # 2002-123  

Instructional Aids:

1. Electrician’s Tools Of The Trade PowerPoint Presentation  
2. Electrical Tools Word Bank Handout  
3. Electrical Tools Word Bank Handout Key  
4. Electrician’s Tools Of The Trade Exam  
5. Electrician’s Tools Of The Trade Exam Key

Materials Needed:

1. Basic set of electrician’s hand tools.  
2. Tool Identification Sheet.

Equipment Needed:

1. Computer  
2. In focus Projector

Learner

Students should be familiar with basic tool and shop safety.
## Introduction

**Introduction (LSI Quadrant I):**
- **Say:** Using the appropriate tools for the job when installing electrical wiring is essential to completing the work correctly and in a safe manner.
- **Ask:** What are some of the things that can happen when tools are used incorrectly?

## Outline

**Outline (LSI Quadrant II):**
- PowerPoint presentation may be used in conjunction with testing devices to enhance learning concepts.
  1. List and identify each tool by name.
  2. Describe the use of each tool.
  3. Demonstrate the use of each tool.
  4. Explain safety concern of each tool.
  5. Create a safe environment where students will be allowed to experiment with hand tools.

## Application

**Guided Practice (LSI Quadrant III):**
- Teacher will demonstrate the use of each hand tool.
- Teacher will maintain supervision while guiding students in the use of each tool.

**Independent Practice (LSI Quadrant III):**
- Students work in lab setting demonstrating their skills with the use of each individual hand tool.

## Summary

**Review (LSI Quadrants I and IV):**
- Check for knowledge.
  1. Have students verbally identify each tool by name.
  2. Have students state safety concern of each tool.

## Evaluation

**Informal Assessment (LSI Quadrant III):**
- Teacher monitors students' progress with the use of tools.
- Teacher ensures safety procedures for using tools are followed.

**Formal Assessment (LSI Quadrant III, IV):**
- Quiz and Answer Key for Tool Identifications.

## Extension/Enrichment (LSI Quadrant IV):**
- Students continue the use of tools to develop skills in electrical wiring.
Word Bank

Fill in the correct tool for each description

1. ________________ Equipping drill holes with bolt threads, also retapping damaged threads.

2. ________________ Forming loops on small conductors also cutting and stripping small conductors.

3. ________________ Reaming burrs from cut conduits and EMT.

4. ________________ Used for turning bolts, nuts, and small pipe fittings.

5. ________________ Installing and removing Allen screws.

6. ________________ Also known as sidecutters.

7. ________________ Pulling conductors through conduit, and also pulling cables through insulated walls.

8. ________________ Checking circuits for power also checking fuses and breakers.

9. ________________ Tool used for cutting conductors in limited spaces, also known as “dykes”.

10. ________________ Holding and tightening couplings and conductors.

a. Slip-joint pliers  f. Lineman’s pliers
b. Conduit reamer  g. Adjustable wrenches
c. Hex key set  h. Circuit tester
d. Tap tool  i. Needle-nose pliers
e. Diagonal pliers  j. Steel fish tape and reel
Word Bank Key

Fill in the correct tool for each description

a. Slip-joint pliers  f. Lineman’s pliers
b. Conduit reamer  g. Adjustable wrenches
c. Hex key set  h. Circuit tester
d. Tap tool  i. Needle-nose pliers
e. Diagonal pliers  j. Steel fish tape and reel

1. Tap tool  Equipping drill holes with bolt threads, also retapping damaged threads.
2. Needle-nose pliers  Forming loops on small conductors also cutting and stripping small conductors.
3. Conduit reamer  Reaming burrs from cut conduits and EMT.
4. Adjustable wrenches  Used for turning bolts, nuts, and small pipe fittings.
5. Hex key set  Installing and removing Allen screws.
6. Lineman’s pliers  Also known as sidecutters.
7. Steel fish tape and reel  Pulling conductors through conduit, and also pulling cables through insulated walls.
8. Circuit tester  Checking circuits for power also checking fuses and breakers.
9. Diagonal pliers  Tool used for cutting conductors in limited spaces, also known as “dykes”.
10. Slip-joint pliers  Holding and tightening couplings and conductors.
Electrician’s Tool Identification Exam

Name ___________________________  Date ________

Match the name of each tool with the illustration:

a. Lineman Pliers  h. Hacksaw
b. Diagonal Pliers  i. Nut Drivers
c. Wire Strippers  j. Adjustable Wrench
d. Needle Nose Pliers  k. Center Punch
e. Tap Tool  l. Steel Tape Measure
f. Conduit Reamer  m. Conduit Bender
Electrician’s Tool Identification Exam Key

Name __________________________ Date ________

Match the name of each tool with the illustration:

a. Lineman Pliers  h. Hacksaw  i. Nut Drivers  k. Center Punch
b. Diagonal Pliers  j. Conduit Reamer  l. Steel Tape Measure  m. Conduit Bender
c. Wire Strippers  k. Tap Tool  n. Circuit Tester

d. Hex Keys  e. Conduit Bender