ELECTRICITY FUNDAMENTALS
Course Syllabus

Course Number: ACA-1000
OHLAP Credit: No
OCAS Code: None
Course Length: 45 Hours
Career Cluster: Architecture & Construction
Career Pathway: Construction
Career Major(s): Construction Academy

Pre-requisite(s):

Course Description: This course is an introduction to general electrical occupations, safety, materials, tools and equipment, and residential applications. Students will learn about circuits and the related components.

Textbooks:

Course Objectives:

1. Discuss hazardous of electricity.
2. Define terms related to electrical safety.
3. Discuss basic electrical safety practices.

B. Identify And Demonstrate the Use of Various Materials Used in Electrical Installations.
1. Identify various boxes used in electrical construction
2. Identify various conduits and fittings required for electrical installations
3. Identify various devices and their covers required for electrical installations
4. Identify various cables and flexible conduits required for electrical installations

C. Perform Basic Interpretations of the National Building Code.
1. Explain the necessity of installing electrical systems by NEC requirements.
2. Explain the history and the purpose NEC.

D. Identify and Select Proper Conductors.
1. Identify wire gauges and differentiate between their uses and purposes.

E. Operate Hand Tools and Portable Electrical Equipment
1. Identify hand tools commonly used in the electrical trade.
2. Follow specific safety procedures for electrical hand tools.
3. Follow specific safety procedures for operation of portable electrical
4. Use hand tools to perform various electrical procedures.
5. Demonstrate correct methods of repairing, cleaning, and caring for electrical hand tools.

F. Connect and Operate Basic Electrical Circuits.
1. Connect and operate an electrical circuit using a knife switch.
2. Describe the operation, function, and give the schematic symbol of a motor.
3. Connect and operate an electrical circuit with a motor.

G. Operate, Test, and Measure Circuits.
1. Define voltage.
2. Describe the function of a volt-ohm meter.
3. Explain how to measure voltage with a DMM.
4. Describe how to measure continuity in a circuit.
5. Test the continuity of wires using a DMM.
6. Describe the function and operation of a circuit breaker and give its schematic symbol.
7. Operate a circuit using a circuit breaker.

H. Identify The Different Uses For Receptacles.
1. Identify various types of receptacles used in residential and commercial installations and discuss their purposes.

I. Demonstrate Knowledge of Electrical Switches.
1. Identify various types of switches used in residential and commercial installations and discuss their purposes.

J. Complete a Project Installing Wiring in a Residential Application.
1. Install the following:
   a. receptacle
   b. multi-receptacle
   c. switched receptacle
   d. 240v dryer receptacle
   e. GCFI receptacle
   f. GCFI Feed Through receptacle

1. Perform various pipe bends on EMT using bending tools:
   a. $90^\circ$ bend

1 Residential Electrician’s Assistant Skill Standards -- Aligns with the Oklahoma Construction Industries Board

1 ODCTE objective
2 NCCER objective
Teaching Methods: The class will primarily be taught by the lecture and demonstration method and supported by various media materials to address various learning styles. There will be question and answer sessions over material covered in lecture and media presentations. Supervised lab time is provided for students to complete required projects.

Grading Procedures:
1. Students are graded on theory and shop practice and performance.
2. Each course must be passed with seventy (70%) percent or better.
3. Grading scale: A=90-100%, B=80-89%, C=70-79%, D=60-69%, F=50-59%.

Description of Classroom, Laboratories, and Equipment:
Tulsa Technology Center campuses are owned and operated by Tulsa Technology Center School District No. 18. All programs provide students the opportunity to work with professionally certified instructors in modern, well-equipped facilities.

Available Certifications/College Credit:
The student may be eligible to take state, national or industry exam after completion of the program. College credit may be issued from Oklahoma State University-Okmulgee or Tulsa Community College. See program counselor for additional information.

College Credit Eligibility:
The student must maintain a grade point average of 2.0 or better.