# Fundamentals of Electricity & Electronics Course No. 41170 Credit: 1.0

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| **Student name:**  |  | **Graduation Date:** |  |

Pathways and CIP Codes:Energy (17.2071); Networking & Telecommunications (11.0901)

Course Description: A **Technical level** course designed to instruct students in terminology and basic concepts related to the field electricity and electronics.

Directions:The following competencies are required for full approval of this course. Check the appropriate number to indicate the level of competency reached for learner evaluation.

**RATING SCALE:**

4. Exemplary Achievement: Student possesses outstanding knowledge, skills or professional attitude.

3. Proficient Achievement:Student demonstrates good knowledge, skills or professional attitude. Requires limited supervision.

2. Limited Achievement:Student demonstrates fragmented knowledge, skills or professional attitude. Requires close supervision.

1. Inadequate Achievement:Student lacks knowledge, skills or professional attitude.

0. No Instruction/Training:Student has not received instruction or training in this area.

## Benchmark 1: Electricity & Electronics Fundamentals

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 1.1 | Students will apply proper OSHA Safety Standards to their learning in electricity and electronics |  |
| 1.2 | Students will relate, identify, and apply Ohm’s law to voltage, current, resistance, power, and energy. |  |
| 1.3 | Students will define and explain direct and alternating currents along with components and schematics used in electronics circuitry. |  |
| 1.4 | Students will correctly calculate and set up lab equipment for safety, design, test, using Ohm’s law and circuit measurements. |  |
| 1.5 | Students will read and interpret color codes and symbols to identify electrical components and values. |  |
| 1.6 | Students will measure properties in a circuit using DMM meters, oscilloscopes, and power supplies. |  |
| 1.7 | Students will compute, measure, apply, construct, and verify Ohm’s law as it applies to Series and Parallel circuits |  |
| 1.8 | Students will apply, construct, and verify the operation of DC circuits that demonstrate the maximum power of transfer theory. |  |
| 1.9 | Students will define magnetic properties of circuits and devices. |  |
| 1.10 | Students will define, identify, verify and troubleshoot RC and RL time constant circuits. |  |
| 1.11 | Students will define basic motor theory and operation. |  |
| 1.12 | Students will define, construct, verify, and troubleshoot AC capacitive and inductive circuits |  |
| 1.13 | Students will define, construct, verify, and troubleshoot AC circuits utilizing transformer. |  |
| 1.14 | Students will define, construct, and verify series and parallel resonant circuits. |  |
| 1.15 | Students will define, construct, verify, and troubleshoot filter circuits. |  |

I certify that the student has received training in the areas indicated.

Instructor Signature:

For more information, contact:

CTE Pathways Help Desk

(785) 296-4908

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