# Advanced Electricity & Electronics Course No. 41270 Credit: 0.5

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

Pathways and CIP Codes: Energy (17.2071)

Course Description: An **application level** course designed to allow students to apply theory and technical skills learned previously to troubleshoot complex electricity and electronic circuitry and systems.

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.

**Prerequistes: Either 41170 Fundamentals of Electricity & Electronics or 21201 Foundations of Electronics**

## Benchmark 1: Electricity and electronics application

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 1.1 | Apply proper OSHA Safety Standards to their learning in electricity and electronics |  |
| 1.2 | Identify and explain operation of basic electronic components, and series & parallel circuit functions. |  |
| 1.3 | Define and explain direct and alternating currents along with components and schematics used in electronic circuitry. |  |
| 1.4 | Correctly calculate and set up lab equipment for safety, design, test, using Ohm’s law, and circuit measurements. |  |
| 1.5 | Identify and explain use of circuit breaker, fuses, construction of conductors and insulator functions. |  |
| 1.6 | Understand and explain electron theory. |  |
| 1.7 | Demonstrate an understanding of instrumentation schematics, control circuitry, ground protection, protective relaying, magnetism, relays, series & parallel, and combination circuits. |  |
| 1.8 | Explain theory of plant operations including motors, generators, transformers, and auxiliary systems. |  |
| 1.9 | Diagnose problems and perform maintenance on electrical supply systems, electrical controls, resistive components, and rotating equipment |  |
| 1.10 | Identify and explain use of battery systems, electrical distribution, emergency power, and transformer and auxiliary systems. |  |
| 1.11 | Identify and explain use of advanced electronic theory (including operational amplifiers and integrated circuits), digital electronics, circuit timing, and process measurements. |  |
| 1.12 | Maintain, troubleshoot, and repair electronic equipment, signal converters, electrical components, sensors and detectors, instrumentation, actuators, and auxiliary equipment. |  |

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

[pathwayshelpdesk@ksde.org](mailto:pathwayshelpdesk@ksde.org)



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