

Electrical Technology

AAS

Competencies:

AAS: Electrical Technology

General Education Competencies: (AAS & Diploma)

Competencies will be met at the level appropriate to the credential.

Upon completion of this program, the graduate can:

Students should prepare for the twenty-first century by gaining:

- A. Knowledge of human cultures and the physical and natural worlds
 - Through study in the sciences and mathematics, social sciences, humanities, histories, languages, and the arts

- B. Intellectual and practical skills, including
 - inquiry and analysis,
 - critical and creative thinking,
 - written and oral communication,
 - quantitative literacy,
 - information literacy,
 - teamwork and problem solving

- C. Personal and social responsibility, including
 - civic knowledge and engagement (local and global),
 - intercultural knowledge and competence,
 - ethical reasoning and action,
 - foundations and skills for lifelong learning.

- D. Integrative and applied learning, including
 - synthesis and advanced accomplishment across general and specialized skills

Construction Electrician Track and Diploma Track

Technical Competencies:

1. Compute resistance, current, voltage, and power in alternating circuits (AC) and direct current (DC).
2. Connect a digital multi-meter to measure resistance, current, and voltage.
3. Apply proper safety practices when working with electrical circuits.
4. Solve electrical circuits using Ohm's Law.
5. Analyze, construct, and troubleshoot series circuits, parallel circuits, series-parallel circuits, capacitor circuits, and inductor circuits.
6. Connect an oscilloscope to measure voltage and frequency.
7. Identify and use basic hand tools.
8. Compute and measure conductance and resistance of conductors and insulators.
9. Solve circuits using Kirchhoff's Laws, Norton's Theorem, Superposition Theorem, and Thevenin's Theorem.
10. Connect and measure current and voltage for a single-phase transformer.
11. Connect and measure current and voltage for a three-phase transformer.
12. Design a resonant circuit.
13. Install and design circuits used in residential applications that meet the requirements of the local code or National Electric Code whichever is applicable.
14. Install receptacles, ground fault circuit interrupters, lighting fixtures, smoke alarms, and appliance circuits.
15. Install circuit breakers, arc fault circuit breakers, meter bases, service entrance equipment, underground services, and overhead services.
16. Calculate and size wire using the National Electrical Code for residential applications.

17. Install cables and wire used in residential applications using the appropriate wiring methods for the wire or cable being used.
18. Install different type of conduit systems using the correct installation criteria for the type of conduit chosen in commercial and industrial applications.
19. Compute the size of conductors needed in circuits used in commercial and industrial applications using the National Electric Code.
20. Calculate the correct size of conduit needed for commercial and industrial applications.
21. Install, test, and troubleshoot AC motors, DC motors, alternators, and generators.
22. Design and wire motor control circuits using pushbuttons, limit switches, sensors, motor starters, relays, overloads, and over current protection devices.
23. Solve algebraic equations using techniques which include signed numbers, scientific notation, algebraic expressions, linear equations, and systems of equations.
24. Calculate solutions for right triangles using trigonometric functions and Pythagorean Theorem.