

Course Code: ELT 131**Course Title:** Residential Wiring**Department:** Applied Sciences and Technologies**Effective Date:** Summer 2026**PCS Code:** 1.2 - Occupational/Technical Instruction**CIP Code:** 47.0105**Repeatability:** 0

Credit Hours

Catalog Notation: 2-2-3**Credit Hour Distribution:**

Lecture: 2

Lab: 2

Clinical: 0

Total: 3

General Course Information

Catalog Description

Single phase power distribution and transmission systems. Interpretation and use of National Electrical Code (NEC). Interpretation of blueprints and wiring techniques as applied from service entrance to load.

General Course Objectives

The student should be able to use the NEC as it applies to local residential construction. The student should be able to use electrical theory to lay out and install most types of residential circuits.

Minimum Placement Levels

English	Reading	Math
None	None	Placement out of MAT 060

Prerequisites

None

Methods of Evaluation

Students will be given a minimum of 2 quizzes, 1 final exam, 1 lab practical exam, and 12 lab assignments.

Instructional Materials and Additional Supplies

Modern Residential Wiring, 13th Edition. Holzman. ISBN# 978685845223

Safety Glasses

Course Content

General Learning Outcomes (GLOs)

- Communication: Students will demonstrate the ability to read, write, listen, and speak effectively.
- Reasoning and Inquiry: Students will demonstrate the ability to solve problems using deductive reasoning and logic, quantitative reasoning, or the scientific method.

Course Segments and Student Learning Outcomes

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Safety, Clothing Devices, Lockout/Tagout	1. Describe proper safety procedures to be used in the lab, personal safety equipment required, and equipment hazards. 2. Demonstrate proper use of safety apparel, procedures, and equipment, and demonstrate lockout/tagout.	2	2	0
Fundamentals of Electricity: definition, electron and conventional, Ohm's Law, theories, voltage, current, resistance, sources, direct current, alternating current, single and three-phase; Series and Parallel Circuits; Conductors, Semiconductors and Insulators	1. Describe the theory of electricity. 2. Differentiate the various phases of electric current. 3. Identify series and parallel configurations. 4. Demonstrate the ability to safely take measurements of voltage, current, and resistance and to describe different voltage systems.	4	2	0
Laboratory: Interpretation and Use of the National Electrical Code; Nomenclature and Use of Conductors and Electrical Devices	1. Use the code to solve practical wiring installation problems. 2. Identify, describe the function of, and prescribe a use for various conductors and devices.	4	4	0
Measurement of Electricity: volts, Ohms, amps, watts, measuring instruments	1. Express the relationships among the units of measurement. 2. Demonstrate the safe use of test equipment.	2	2	0
Electrical Problems	1. Describe power equations, compute electrical consumption, and calculate electrical bills.	2	0	0
Electrical Symbols	1. Identify and define electrical symbols.	2	0	0
Polarization	1. Polarize a system.	2	0	0
Wiring Diagrams and Branch Circuits	1. Use appropriate symbols and draw schematic wiring diagram.	4	0	0
Planning a Wiring System: distribution, transformers, central metering, feeder lines, grounding systems, service entrance	1. Describe the inductance principle in step-up and step-down transformers. 2. Determine efficient and economical location of power distribution center. 3. Ground devices, systems, and install ground fault interrupters.	4	0	0

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Laboratory: Bringing electrical service to and into buildings; Installing interior wiring	1. Determine feeder wire size for an electrical installation, given the NEC and a computed electrical load. 2. Identify service entrance components and describe grounding and bonding requirements. 3. Construct and test common branch circuits.	4	18	0
Lab Practical	1. Demonstrate psychomotor skill in constructing residential circuit.	0	2	0

Total Contact Hours

Lecture Hours	Lab Hours	Clinical Hours
30	30	0