

SOUTHEAST COMMUNITY COLLEGE
ADVANCED TECHNOLOGIES AND SKILLED TRADES DIVISION
Utility Line Worker Program
Revision Date: November 2025

I. CATALOG DESCRIPTION

Course Number: UTIL 1240
Course Title: Concepts of Electricity II
Prerequisite(s): UTIL 1010 with a "C" or higher

Catalog Description: Study of electrical theory and components in alternating current (AC) circuits. Topics include the function of resistors, capacitors, inductors, and transformers and their effects on current flow. Laboratory work emphasizes circuit construction, testing, and analysis using proper test equipment, safety procedures, and circuit diagrams.

Credit Hours: 5.0
Class Hours: 60
Lab Hours: 45
Total Contact Hours: 105

II. COURSE OBJECTIVES: *Course will:*

- A. Expand students' understanding of electrical theory to include alternating current (AC) circuits and related components.
- B. Develop the ability to analyze the behavior of resistors, capacitors, inductors, and transformers in AC systems.
- C. Emphasize safe and accurate circuit construction, measurement, and troubleshooting using standard test equipment.
- D. Strengthen students' skills in interpreting and applying circuit diagrams to real-world electrical systems.
- E. Provide laboratory experiences that reinforce classroom theory through testing, data collection, and analysis.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES

A. Student Learning Outcomes: *Student will be able to:*

- 1. Explain the fundamental differences between DC and AC current and voltage.
- 2. Analyze the effects of resistance, inductance, and capacitance on current flow and phase relationships in AC circuits.
- 3. Calculate impedance, reactance, power, and power factor in single-phase AC circuits.
- 4. Construct AC circuits using resistors, capacitors, inductors, and transformers according to circuit diagrams.
- 5. Measure voltage, current, and phase relationships in AC circuits using appropriate test instruments.
- 6. Apply transformer principles to predict voltage and current behavior in basic AC systems.
- 7. Demonstrate proper laboratory safety and equipment handling procedures.
- 8. Record, interpret, and analyze experimental data to verify theoretical circuit behavior.
- 9. Troubleshoot basic AC circuit faults using logical diagnostic methods and test equipment.

B. General Education Learning Outcomes

1. GELO #3: Critical Thinking and Problem Solving

a. Outcome #1: Collect, identify, interpret, and analyze data.

IV. CONTENT/TOPICAL OUTLINE (*course outline may provide more detailed information*)

A. TBD

1.

V. INSTRUCTIONAL MATERIALS

A. Required Text(s): TBD

B. Other Resources:

1.

VI. METHODS OF PRESENTATION/INSTRUCTION

A. Methods of presentation typically include a combination of the following:

1.

VII. METHODS OF EVALUATION

A. Methods of evaluation typically include a combination of the following:

1. Participation
2. Daily Assignments
3. Written exams/quizzes
4. Lab performance

C. SCC STANDARD GRADING SCALE POLICY:

A+	95-100	C+	75-79	F	59 or less
A	90-94	C	70-74		
B+	85-89	D+	65-69		
B	80-84	D	60-64		

VIII. SPECIFIC COURSE REQUIREMENTS