

**I. CATALOG DESCRIPTION:**

A. Department Information:

Division: Refrigeration and Air Conditioning  
Department: Refrigeration and Air Conditioning  
Course ID: REFRIG 060A-Z  
Course Title: Refrigeration and Air Conditioning Electricity I  
Units: 3  
Lecture: 3 Hours  
Prerequisite: None

- B. Course and Schedule Description: This is the first term of a three-term national training course offered in conjunction with the Refrigeration Service Engineers Society and is a comprehensive study of fundamental electricity. This course is designed to help certify journeymen-level refrigeration technicians and keep their knowledge current. Department Advisory: HVAC Refrigeration work experience

**II. NUMBER OF TIMES COURSE MAY BE TAKEN FOR CREDIT: One**

**III. EXPECTED OUTCOMES FOR STUDENTS:**

Upon completion of this course, students will be able to:

- A. Compare the interaction between voltage, current, and resistance (Ohms Law)
- B. Measure, using a digital voltmeter and an amp probe
- C. Distinguish between different electrical capacitors
- D. Identify electrical symbols
- E. Analyze electrical drawings
- F. Categorize electrical safety procedures

**IV. CONTENT:**

- A. Fundamental Concepts of Electricity
  - 1. The simple electric circuit
  - 2. Resistance
  - 3. Electrical circuit
  - 4. Alternating current
  - 5. Basic electricity
- B. Basic Electrical Indicating Instruments
  - 1. The clamp on meter
  - 2. Electrical meters
  - 3. Insulation-resistance testing
  - 4. Recording instruments
- C. Conductors and Wiring Techniques
  - 1. Practical knowledge of electrical circuitry
- D. Taking the Mystery Out of Electricity
  - 1. Understanding capacitors
  - 2. Electrical symbols
  - 3. Short course in hermetic circuitry
  - 4. Safety
- E. Electrical Familiarization
  - 1. Electrical drawings and technical manuals
  - 2. How to read wiring diagrams
  - 3. Wiring exercise

**V. METHODS OF INSTRUCTION:**

Methods of instruction will vary from instructor to instructor but may include:

- A. Lectures and discussions about the fundamentals of electricity, electrical tools, symbols, wiring techniques and safety procedures.
- B. Lectures and discussions are complemented with handouts and instruction on different methods of analysis and safety procedures.
- C. Dynamics are accented with the use of pictures, diagrams, and videos.
- D. Homework is assigned to promote expertise, vocabulary, and writing skills.

**VI. TYPICAL ASSIGNMENTS:**

Typical assignments will vary from instructor to instructor but may include:

- A. Define matter, compounds, elements, and atoms.
- B. Define the terms volt, ohm, and ampere.
- C. Differentiate between a series and a parallel circuit.

**VII. EVALUATION:**

A. Methods of evaluation will vary from instructor to instructor but may include:

1. Written tests
2. Final exam

Typical Questions:

- a. What is voltage?
- b. If we have two components in series, what does that mean?

B. Frequency of evaluation will vary from instructor to instructor but may include:

1. Three (3) written tests
2. One (1) final exam

**VIII. TYPICAL TEXT:**

Refrigeration Service Engineers Society, RSES Refrigeration and Air Conditioning Electricity, Refrigeration Service Engineers Society, Des Plaines, IL, 2002

**IX. OTHER SUPPLIES REQUIRED OF STUDENTS: None**