

# Virginia Western Community College

## ELE 133

### Practical Electricity I

#### Prerequisites

MTE 1, 2 and 3.

#### Course Description

Teaches the fundamentals of electricity, terminology, symbols and diagrams. Includes the principles essential to the understanding of general practices, safety, and the practical aspects of residential and non-residential wiring and electrical installation, including fundamentals of motors and controls.

**Semester Credits: 3 Lecture Hours: 2 Lab/Clinical/Internship Hours: 2**

#### Required Materials

##### **Textbook:**

Electrical Studies for Trades. 5th Edition. ISBN-13: 978-1133278238.

##### **Other Required Materials:**

- Scientific calculator, TI-30 or equivalent
- ETCAl Circuit software (Available for download from BlackBoard)
- Safety Glasses

May require preparation of a report as an out-of-class activity.

#### Course Outcomes

**At the completion of this course, the student should be able to:**

- Explain the following:
  - a) Electrical Terminology and Symbology
  - b) DC and AC Fundamentals
  - c) Wire Sizing and Wiring Methods
  - d) Transformers
  - e) Basic Lighting and Heating
  - f) Electrical Distribution
- Use and interpret schematic and wiring diagrams.
- Use schematic and wiring diagrams to construct electrical circuits.
- Demonstrate the proper use of test equipment to check basic circuitry.

## Topical Description

Week	Topic/Activities	Reference
1	Introduction and Course Policies Electrical and Campus Safety	Notes and Videos
2	Fundamentals of Electricity Lab: Electrical Quantities/Units conversion	Chapter 1
3	Electrical Quantities and Ohms Law Chapter 3a Lab: Resistor Color Code and Meter Reading Handout/Software	Chapter 2
4	Electrical Sources and Static Electricity	Chapter 3
5	Magnetism Lab: Electromagnetism Demo	Chapter 4
6	Series Circuits Lab: Series Circuits	Chapter 5
7	Parallel Circuits Lab: Parallel Circuits	Chapter 6
8-9	Combination (Series-Parallel) Circuits Lab: TBA	Chapter 7
10	Measuring Instruments Lab: TBA	Chapter 8
11	Introduction to Alternating Current  Chapter 7 Lab: TBA	Chapter 9
12	Electrical Services Lab: Electrical Service	Chapter 15
13	General Wiring Practices Part 1	Chapter 16
14	General Wiring Practices Part 2 Lab: Switch-Controlled Lamp Holder and Three and Four-Way Switches	Chapter 17
15	Supplemental Topics/Exam Review	

## **Notes to Instructors**

- Suggested Grading Scheme:

Scheduled Test	60%
Labs and Homework	20%
Comprehensive Final Exam	20%

- Suggested Grading Scale:

A = 91 – 100  
B = 81 – 90  
C = 71 – 80  
D = 60 – 70  
F = below 60

- Recommended lab materials, sample tests and supplemental handouts are available from the program head.
- Instructors should notify the program head at least a day in advance for any special accommodations or materials that will be needed for class.