

# Virginia Western Community College

## ELE 134

### Practical Electricity II

#### **Prerequisites**

MTE 1, MTE 2 and MTE 3; ELE 133

#### **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:**

Text: Herman, Stephen, Electrical Studies for Trades, 5th Edition, ISBN-13: 978-1133278238. © 2014 Cengage Learning. <http://www.cengage.com/>

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

- Scientific calculator: Same as ELE 133 (TI-30 or equivalent)
- ETCAI Circuit software (Available for download from bb)

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 basic operation of the following:
  - Common types of three-phase and single-phase induction motors
  - Overload Protective Devices
  - Relays, Contactors, and Motor Starters
  - Other assorted control sensors and devices
  - Common Types of Solid-State Devices
  - Digital and programmable control devices
- Use and interpret schematic and wiring diagrams used to install and troubleshoot Air Conditioning Units and Heat Pumps, Oil, Gas, and Electric Heating Units.
- Use schematic and wiring diagrams to construct electrical circuits.
- Demonstrate the proper use of test equipment to check Solid-State Devices and other components.

## Topical Description

<u>Week/Class</u>	<u>Topics/Activities</u>	<u>Reference</u>
1.	Alternating Current (continued)	Unit 9
2.	Alternating Current Loads (Inductive)	Unit 10
3.	Alternating Current Loads (Capacitive)	Unit 11
4.	AC Circuits Review	Units 9-11 <b>Quiz #1</b>
5.	Three-Phase Circuits	Unit 12
6.	Transformers	Unit 13
7.	Three-Phase transformers	Unit 14
9.	<b>Spring Break 03/06/15 – 03/13/16</b>	
10.	Three-Phase Motors	Unit 18
11.	Single-Phase Motors	Unit 19 <b>Quiz #2</b>
12.	Schematic and Wiring Diagrams	Unit 20
13.	Schematic and Wiring Diagrams (continued)	Unit 20
14.	Motor Installation	Chapter 21 <b>Quiz #3</b>
15.	Supplemental Topics	---
16.	Practice and review for final exam	----
17.	Final Exam	----

## **Notes to Instructors**

- Suggested Grading Scheme:

Mid Term		30%
Final Exam		30%
Labs and Homework	20%	
Quizzes	10%	
  
- Attendance 5%
  
- Class Participation 5%
  
- 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