San Bernardino Valley College
Curriculum Approved: FA01

I. CATALOG DESCRIPTION:

A. Division: Technical and Workforce Development
Department: Electricity/Electronics
Course ID: ELECTR 111
Course Title: Direct Current Circuit Laboratory
Laboratory: 3 hours
Units: 1
Corequisite: ELECTR 110

Course Description:
The laboratory complement to ELECTR 110 including experiments reinforcing the theory of electricity and the necessary technical skills.

Schedule Description:
The laboratory complement to ELECTR 110 including experiments reinforcing the theory of electricity and the necessary technical skills.

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. Demonstrate the correct function and operation of the Analog Multimeter, Digital Multimeter, DC Power Supply, and applicable circuitry.
B. Build Direct Current circuits and describe the operation of the circuit.
C. Apply critical thinking and problem solving to troubleshoot Direct Current circuits.
D. Demonstrate the ability to write clear and concise laboratory reports.
E. Identify the common electronic components by physical description.
F. Determine resistor ohmic values and power dissipation ratings of selected resistors.
G. Identify common electronic schematic symbols.

IV. CONTENT:

A. Introduction
1. Calculator fundamentals
2. Scientific notation and metric prefixes
3. Resistor color codes and power dissipation ratings
4. Common symbols used in electronics
5. Meter reading and interpretation

B. Circuit Calculations
1. Ohm’s law calculations
2. Power calculations in DC circuits

C. Circuit Analysis
1. Series circuit calculations and eight hands-on experiments
2. Parallel circuit calculations and three hands-on experiments
3. Series-parallel circuit calculations and three hands-on experiments

D. Network Theorems
1. Calculating voltage divider circuits and one hands-on experiment
2. Solving circuits using the Thevenin’s theorem and one hands-on experiment

V. METHODS OF INSTRUCTION:

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

A. Discussion between the instructor and the student concerning the operation of the different test equipment.
B. Graphs and diagrams to show dynamic circuit relationships.
C. Assign practical laboratory projects with specific objectives; i.e., circuit descriptions, voltage, current and resistance measurements, troubleshooting and series, parallel, and series-parallel circuit analysis.

VI. TYPICAL ASSIGNMENTS:

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

A. Use a calculator to solve Ohm's law and power consumption problems.
B. Complete a variational analysis of a series, parallel, or series-parallel circuit.

VII. EVALUATION:

A. Methods of evaluation will vary from instructor to instructor but may include:
    1. Quizzes
    2. Hands-on laboratory experiments
    3. Written final exam
        Typical Questions:
        a. If a circuit has an applied voltage of 25 volts and a resistance of 10 ohms, how much current will flow through the circuit?
        b. A resistor has colored bands of Red, Red, and Red. What is the ohmic value?
B. Frequency of evaluation will vary from instructor to instructor but may include:
    1. Periodic feedback based on quizzes
    2. Completion of weekly lab experiments with conclusions
    3. One (1) comprehensive final examination

VIII. TYPICAL TEXTS:

Meade, R. L., Foundations of Electronics, 3rd Edition, ITP Delmar, New York, 1998
Gates, E. D., Introduction to Electronics, 4th Edition, ITP Delmar, New York, 2001
Harsany, S. C., Introduction to Electronics, Prentice Hall, New Jersey, 2000

IX. OTHER SUPPLIES REQUIRED OF STUDENTS:

Scientific calculator