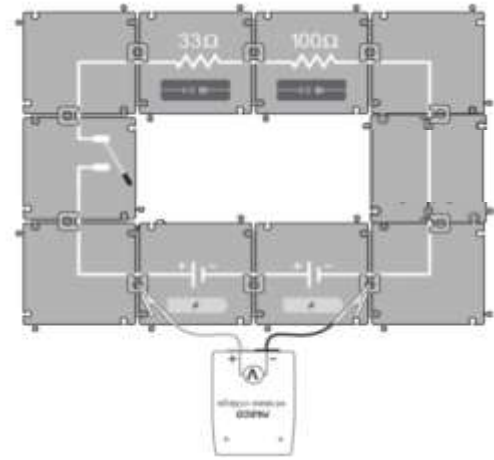




Manual to Lab 5: PHY2048C.

Florida State University

Circuits III



About labs in this class

The labs in this class will have general instructions, and many things need to be figured out by the students. I will be answering any specific questions the students may have without completely giving away the key to the puzzle.

Answer the questions and record your measurements in your lab notebook and submit the notebook at the end of the activity.

About this lab

In this lab, you are provided with tools to make DC circuits and measure them.

Resistors in Parallel and in Series

Activity 1: Make a circuit with resistance in parallel connected to a battery. Draw a sketch of your circuit.

Activity 2: Using the multimeter, measure the current through the circuit and record it. Also measure the voltage across each resistance, and across both.

Activity 3: Test if Ohm's law is valid for these resistors.

Question 1: Is Ohm's law obeyed by these resistors? What is the percentage discrepancy between the theoretical resistance and the one given by multiplying the voltage times the current? Identify sources of error for these measurements.

Activity 4: Test if the total resistance is indeed the addition *in series* of the two resistors. Compute the percentage discrepancy and attempt to explain it.

Activity 5: Build a circuit with resistors in parallel.

Activity 6: Test if the effective resistance is indeed the addition *in parallel* of the two resistors. Test Ohm's law for this configuration. Compute the percentage discrepancies for both tests.

Activity 7: Use the multimeter to test the conservation of current (Kirchhoff's law) in a node of a circuit. Record the total current and show that it is conserved