

Lab #1
Due Tu. 11/13

Please prepare a lab report which records your circuit schematic, hand analysis, circuit measurements, and a picture of your working circuit for each of the experiments.

When performing measurements with the digital multimeter, it is easier not to use the switch. Instead use wires to make connections.

1. Experiment #3: Resistors in Series

- (a) Determine the turn on voltage of the LED by measuring the voltage across LED. This can be found by measuring the voltage across the LED. You should use this value for all hand calculations.
- (b) Draw the circuit schematic and calculate the current drawn from the battery.
- (c) Use the multimeter to measure the current.

In order to measure current, you will need to break your circuit and insert the multimeter in series. Remember to check your multimeter settings before measurements to ensure you have it set appropriately for voltage or current. Recall the anode (positive polarity terminal) is the longer pin on the LED while the cathode (negative polarity terminal) is the shorter pin.

2. Experiment #4: Parallel Pipes

- (a) Calculate the current through the LED (the source current).
- (b) Calculate the current through each of the parallel resistors.
- (c) Verify your calculations by measuring the current through the LED and through each resistor.

3. Experiment #5: Comparison of Parallel Currents

- (a) Calculate the source current.
- (b) Calculate the current through each of the resistors.
- (c) Verify your calculations by measuring the current through each of the parallel paths (measure current between a resistor and LED).

4. Experiment #7: Water Detector

- (a) Measure the voltage between the two wires in the water. You should measure the voltage by touching the wires on the side not in the water.
- (b) Measure the current flowing into the water.
- (c) Calculate the resistance of your cup of water.
- (d) Repeat calculation for the cup of salt water.