

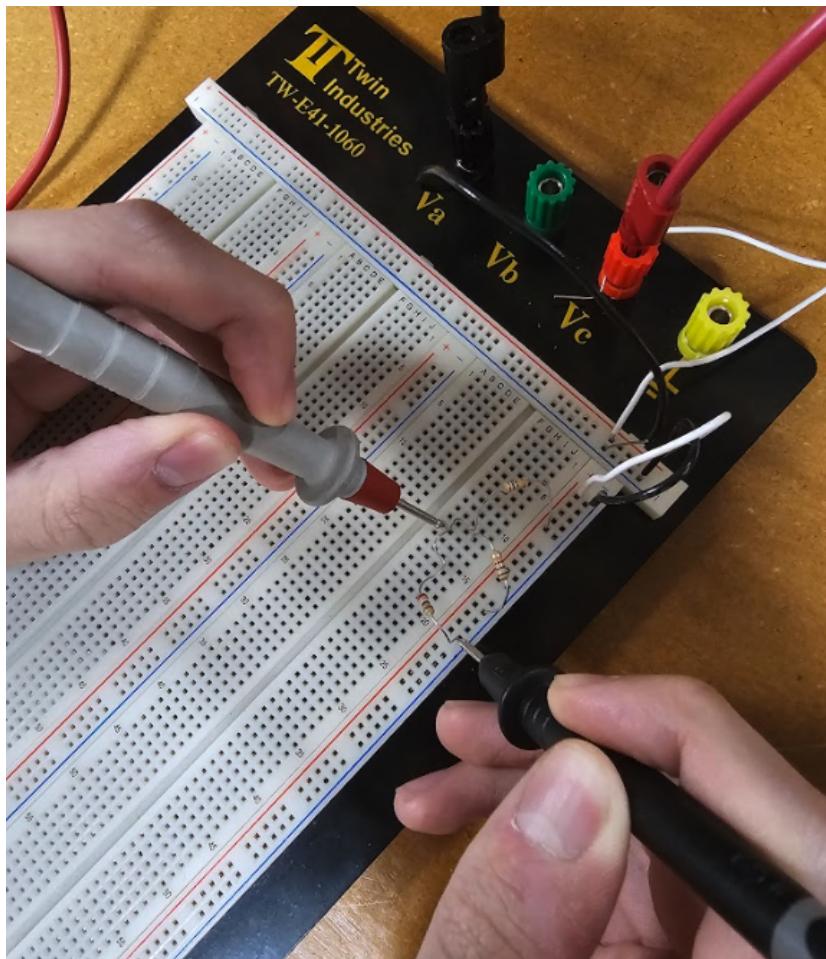
Class:	EE221 Circuits II 1001		Semester:	Fall 2023	
Points	Document author:	Narek Kalikian			
		Author's email:	kalikn1@unlv.nevada.edu		
	Document topic:	Postlab 3			
Instructor's comments:					

1. Introduction / Theory of Operation

This lab's purpose is to finally apply what we know about circuits and how to measure them into practical applications on a breadboard. Using resistors and a power supply as a voltage source on the breadboard, we were able to recreate the circuits we had tested digitally to measure and compare their results.

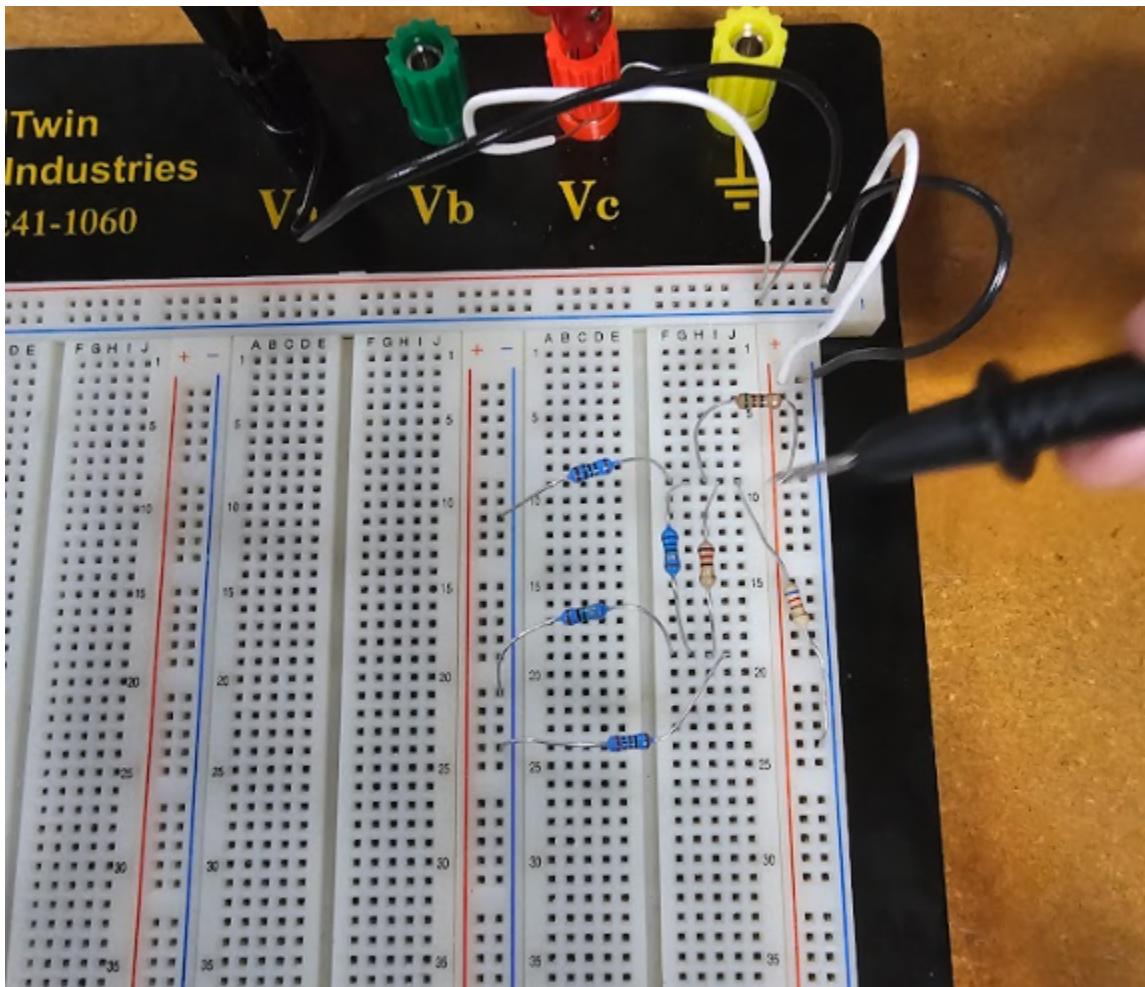
2. Description of Experiments

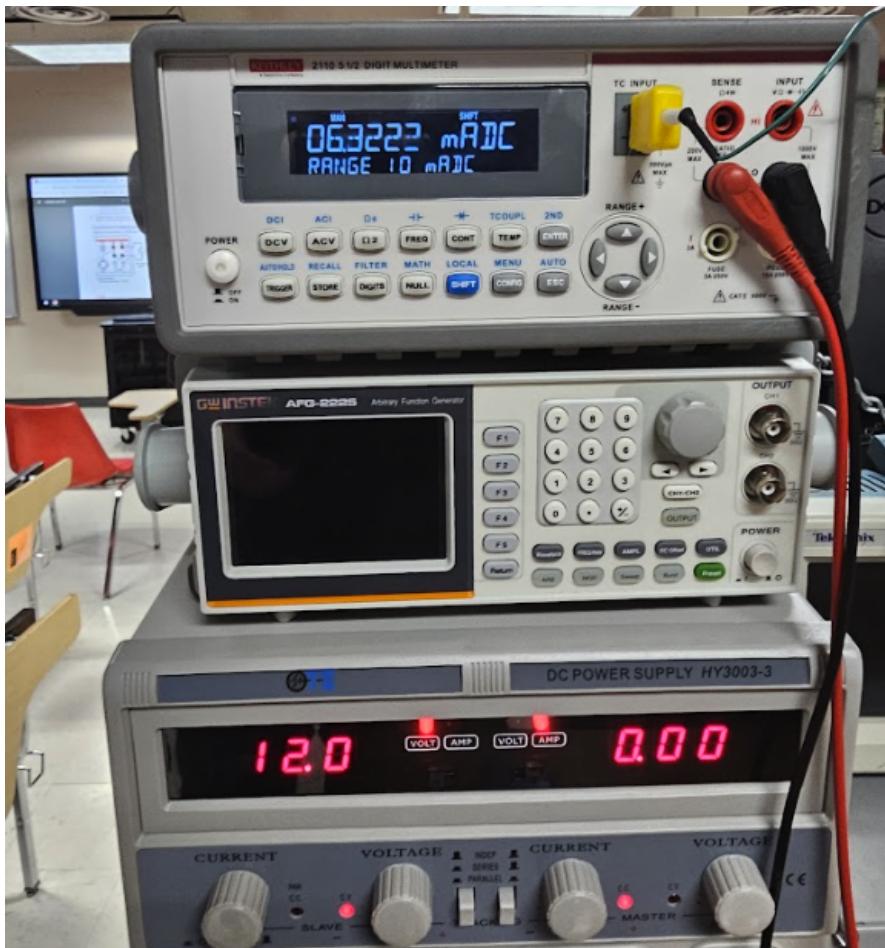
1. Circuit 1 Breadboard and Voltage Reading:





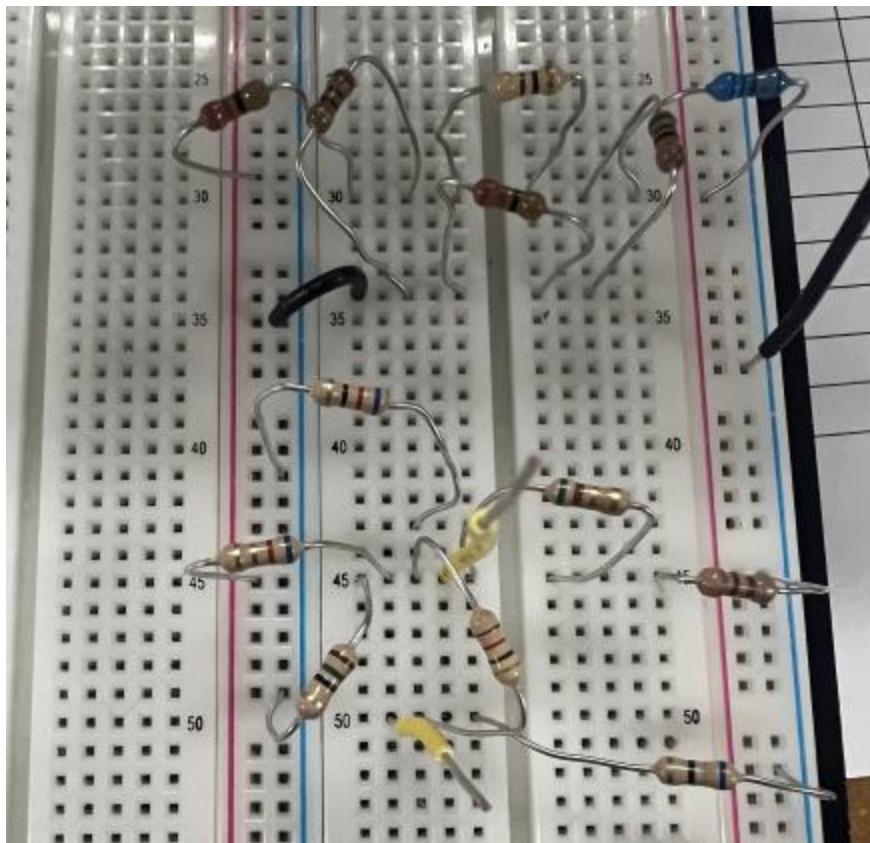
2. 3rd Circuit Breadboard and Voltage Reading





(Measurements could be off: Professor Ming Zhu helped us with circuit and validation of if it was correct. Could be possible the resistors we got from the box had wrong resistance).

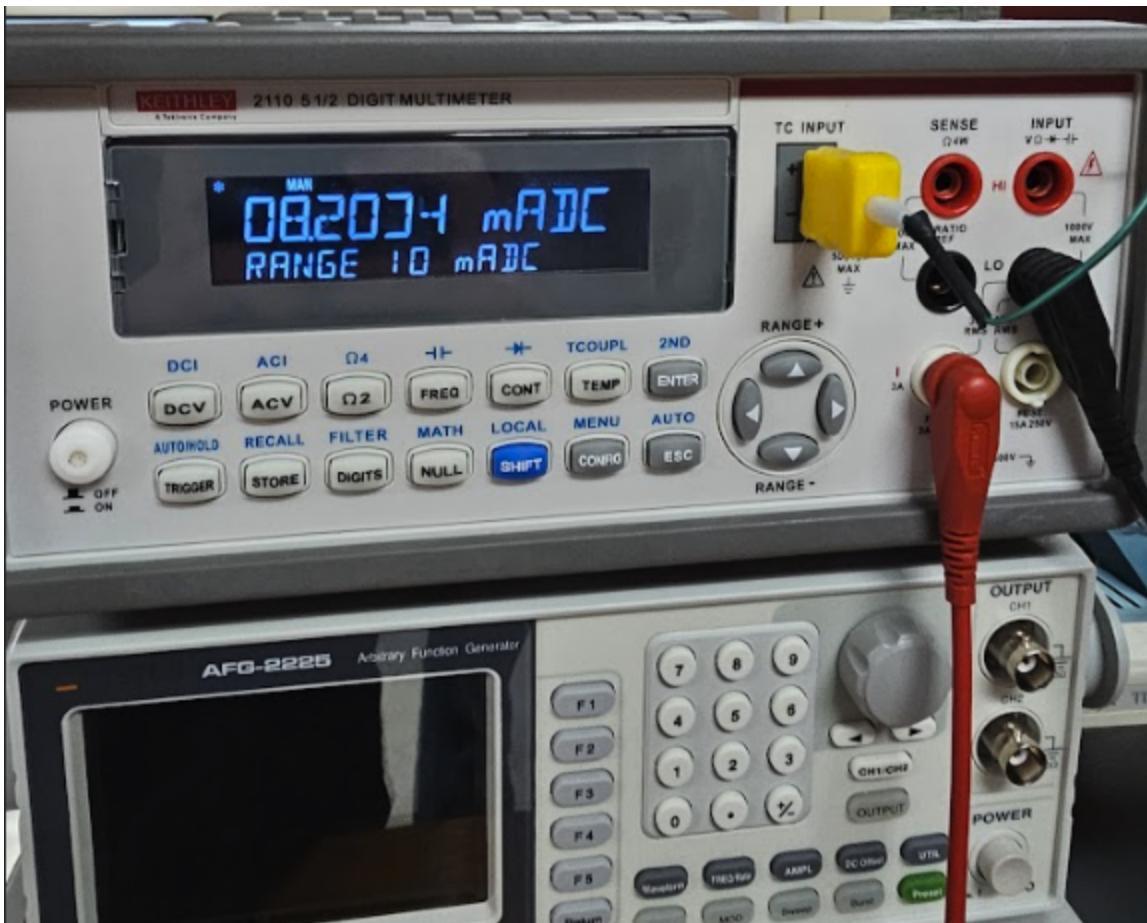
3. Circuit 4 Breadboard and Readings



V1 & V2 Voltages:

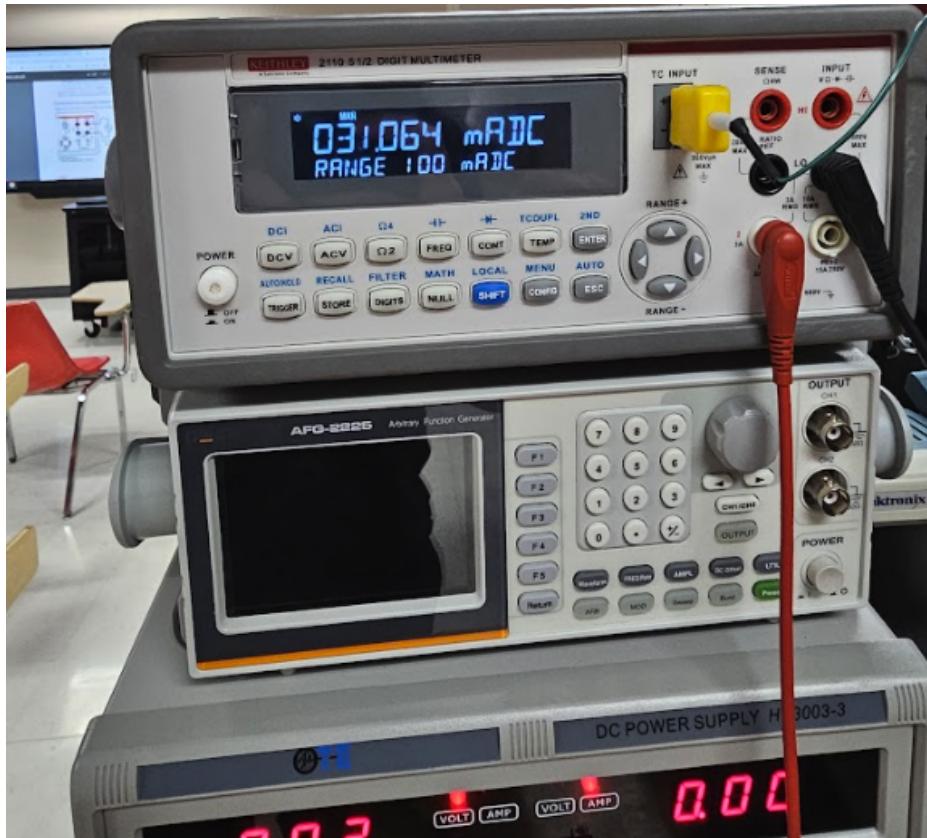


R1 Resistance:

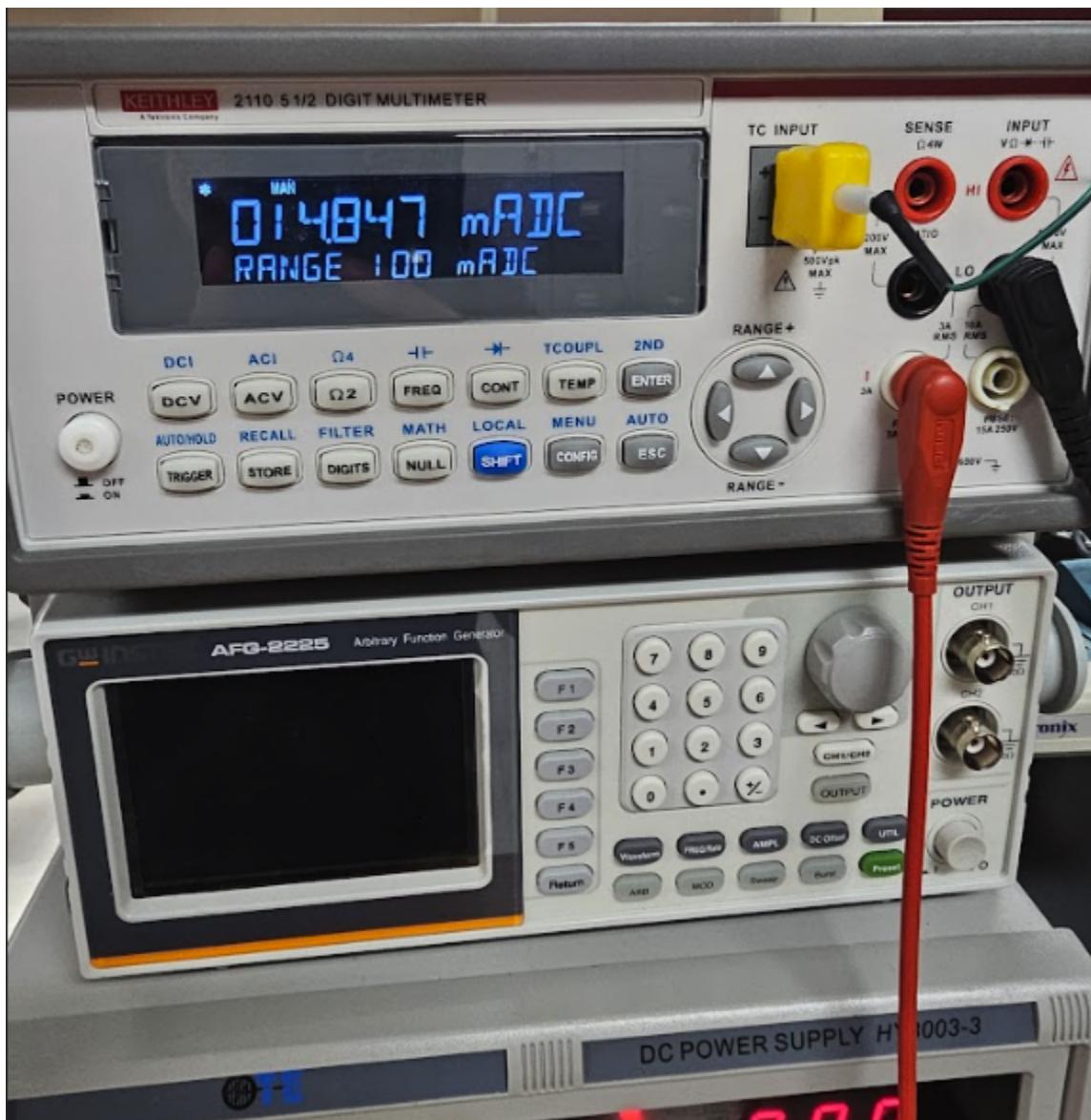


(Wrong voltage readings: Not sure, we got help from Dylan but it could be due to the resistor values again).

R2 Resistance:



R3 Resistance:



		Vout(V)	IR1(mA)	IR2(mA)	IR3(mA)
	LTspice	3	10	2.5	7
Circuit 1	Multisim	3	10	2.5	7
	Measurement	2.98	14.9	2.48	7.45

Circuit 3	i0(mA)
LTspice	498.7
Multisim	498.7
Measurement	632

Circuit 4	V1(V)	V2(V)	I(R1)(mA)	I(R2)(mA)	I(R3)(mA)
LTspice	6	4.8	800	400	100
Multisim	6	4.8	800	400	100
Measurement	7.7	7.7	820	310	148

3. Encountered Problems

We had some issues getting the last circuit working correctly and having the experimental measurements be accurate to the expected values. Possible reasons for measurements being inaccurate are listed for each picture of the readings.

4. Questions and Answers

Question 1: After comparing the LTspice, Multisim, and practical circuit measurement results, I can conclude that it's extremely beneficial to test circuits digitally before implementing them physically. Without the knowledge of what the expected results were supposed to be, we would never know when our circuit is working correctly and when it is not. Also, it allows us to see that not everything is fool-proof and that mistakes can and will happen when dealing with circuitry. You can have faulty equipment, incorrectly labeled resistors, and other minor errors in your experiment that can cause all sorts of issues. Being able to create and test a circuit digitally that provides safe and accurate measurements is very useful.

5. Conclusions

I can conclude that measurements are not always going to be 100% accurate. For that reason, simulating circuits digitally and/or calculating values by hand is extremely invaluable. The physical implementation of circuits on a breadboard can also be potentially dangerous and it's good to know that your circuit is safe to create.