

Lab 5: RC Time Constant

Due Date: April 17

Challenge

Measure the product of resistance and capacitance (RC) for a DC circuit.

Available materials:

multimeter & probes

resistors

capacitors

voltage sensor

Logger Pro software

circuit board, wires, batteries

camera

Technical details

Before attempting to measure RC , familiarize yourself with the Vernier equipment and *Logger Pro* software. For example, measure the voltage across one battery, two batteries in series, a single capacitor before and after charging, etc.

Lab report considerations

Use at least three different combinations of capacitors and resistors. Report the average percent error and its uncertainty. *Consider the true values to be provided by the multimeters.*

Do multiple trials for each RC combination (and that way you can also report the uncertainty on each individual RC combination).

Provide an example circuit diagram as well as a photo of the lab setup.

No AI-generated text is necessary, but feel free to utilize that tool!

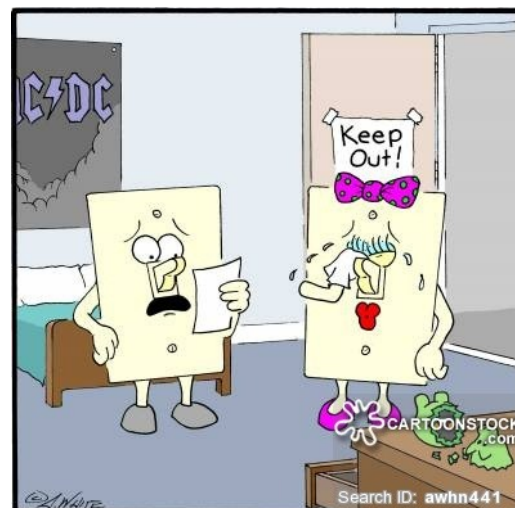
Lab Etiquette

Once you are finished, please help Noah by properly organizing the circuit boards and their components. Also, please put all the capacitors and resistors back into their proper drawers. Ensure you are doing this correctly by measuring their capacitances and resistances via a multimeter. Don't forget to turn off the multimeters.

Teacher approval of your game plan

Please get either Prof. Dale or a TA to approve your experimental and theoretical plans before grabbing equipment. These approvals are worth 4% of the lab grade and will help to promote a successful experience.

A lady took her CD player into the repairman. "I am afraid you have a short circuit," he told her. She said "I don't care how much it costs, lengthen it."



"Dear Mom and Dad, I'm running away from home to join the circuits."