IMPORTANT: IF YOU RE-SUBMIT THE FIRST LAB, YOU MUST INCLUDE THE FIRST, GRADED DRAFT WITH YOUR RESUBMISSION

First, some general comments:

\*) Use quantitative relations whenever possible. You can (and often should) back them up by descriptive language), but all relevant quantitative relations should be presented.

\*) In general, quote significant figures to two significant figures in the uncertainty.

So if you measure a number to +- 0.023, then something like 0.189 +- 0.023 is correct, but 0.1887283 +- 0.0238736 is not.

\*) A lab report is, first and foremost, a narrative. Tables, figures, and plots are important supplements to that narrative, but they should never substitute for the narrative.

\*) Don't rely on the lab manual for description or ideas. Don't use the language of the sort "In our lab manual, we were told to...". You may reference the manual as you would any other source (for the derivation of formulas you use, for example) but it should not be relied upon in your writeup in any other manner.

Thus, please note that each figure or table should be

 \*) Labeled (Figure 1, Table 2.3, etc...)

 \*) Captioned (A plot of X vs. Y showing the ...)

 \*) Referred to in the text. If you don't refer to it, you don't need it. If you need it, then it's important enough to refer to in the text.

For the lab reports, please organize as follows:

1) Title and Abstract (5 pts)

 \*) The abstract should be 1-2 paragraphs. It should summarize what was done in the lab and state the major results and conclusions and any other salient points you feel should be there, if any. It should stand alone from the rest of the report - in other words, the report should be complete and understandable without the abstract. Nothing in the report should rely upon having read the abstract.

2) Introduction (15 pts)

 \*) This needs to provide a backdrop for the work done, a motivation, and an explicit statement (a paragraph or perhaps even just a sentence) of what will be done. It's usually the right place to introduce the formal/theoretical background, with all useful quantitative relations.

 The introduction should present any hypotheses to be tested or goals to be achieved. Your conclusions (see below) should, among other things, report back on the validity of the hypotheses and the progress towards the goals.

3) Apparatus (5 pts)

 \*) List the major components. Give a 1-2 sentence description of their functionality. This description should be a general statement of what the item is and what it does, independent of any specific application in the upcoming discussion of procedure.

4) Procedure (15 pts)

 \*) Describe in detail the generic procedures, and their motivation, for carrying out the work proposed in the introduction. In general, you do not include specific results in the procedures section, but you do discuss how the measurements are done and how the results obtained (for instance, in the impedance lab, you would discuss how the impedance Z is derived from your measured voltages for a given frequency). Procedures are basically instructions on how to obtain the data that you’ll later analyze, and do not include steps in the analysis itself.

5) Data (15 pts)

\*) Present data clearly in written paragraphs, tables, or plots. This should include both raw and derived data (e.g. for the circuits lab, the amplitudes and frequencies from the scope as well as the calculated values of impedance and/or admittance. You should not just include a series of tables and plots: there should be a narrative, even if brief, introducing each set of data and results, and referring to the corresponding tables and plots.

6) Analysis (35 pts)

 \*) Interpret the data and present your findings. Can be interspersed with the "data" section.

7) Summary and conclusions (10 pts)

 \*) Try to think of the "big picture" of what you've learned here. Make a clear statement of any hypotheses and whether they were confirmed or weighed against. Did you learn anything new or unexpected? Was the stated purpose of the lab well-motivated in the end? Does the experiment suggest other, further experimentation that might be of value? Any new ideas of how to go about things? Some of these won't enter into most conclusions, but it's good to include them if relevant. The summary/conclusions should tie back in to the statements of hypotheses and goals made in the introduction.

In addition, please note that each figure or table should be

 \*) Labeled (Figure 1, Table 2.3, etc...)

 \*) Captioned (A plot of X vs. Y showing the ...)

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