EE241 Laboratory Report Guidance

Overall Guidelines:

- The lab report alone should provide enough information for another student with a background similar to yours to reproduce your work and evaluate your conclusions.
- The entire report should be written in past-tense passive voice, except when describing equations or principles that never change. For example:
  - Past-tense passive voice: "The resistance **was measured** using the multimeter." (rather than "We measured the resistance" or "Measure the resistance.")
  - When describing something that never changes: "For an ideal resistor, voltage **is** proportional to current."
- Use a title page with the lab name, the course, the date, your name and your partner's name (if the lab was carried out in teams).
- Circuit schematics should be done with PSPICE or Multisim. Sometimes strange things happen in MS Word when you import figures. A helpful tip is to copy the figure and then use "Paste Special" to paste the figure as a picture file.
- Data should be displayed in tables or on graphs as appropriate. Think a little bit about the best way to display your data. Use Matlab or Excel for all plots.
- All figures and tables should be labeled and captioned, and the text should refer to them by label. An example is shown in Figure 1 below.

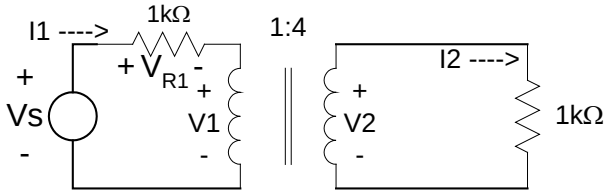

Figure 1: Transformer Circuit

- Equations should be written with Microsoft Equation Editor or MathType (for free download: http://www.dessci.com/en/products/mathtype/trial.asp (after 30 days it will default to Microsoft Equation Editor)).
- Divide the report in the sections, as described below. Use headings to distinguish sections.
- For a long report, follow the title page with a table of contents and a table of figures.
- A sample lab report and excerpts from a lab notebook are available on the EE department web site at:
  http://www.usna.edu/Users/ee/cameronc/Miscellaneous/StudentHelp/SampleLab/index.htm

Sections you should include:

Abstract

The abstract should describe the lab's **purpose, method and results** in 200 words or less. This is not the same as an introduction!

Introduction

This section describes the purpose of the lab. The introduction can be brief. You just want to put the lab in context for the reader. For a major project, this section would include a review of previous work.

Theory

The next section would correspond to the theoretical description of the circuit behavior and if there is a design component to the lab, it should list design equations (make sure to define variables). This section often encompasses the work done in the pre-lab, as well as design done during the lab.

Procedure

The procedure should describe everything you did in the laboratory. Include not just what you measured but how you measured it. It should be written out in complete sentences and in your own words. It should be more complete than the text given in the assignment. For example, The assignment might use a phrase like "Test your resistive sensors to see if their behavior matches what you expect…" Your report should describe how you tested them (in past tense passive voice).

Experimental Results

This section should list results, in tables or plots, as appears appropriate.

Discussion

This section should include any further calculations and comparisons between the results and what was expected. You should also address any discussion points specified in the assignment here. When describing calculations, you don't need to give the blow-by-blow numbers, but you should give any equations used (or refer to these equations if they already appeared in the theory section), your assumptions, and the results of your calculations. If a proof or lengthy calculation is required you can include the work in the appendix, for which you can attach work in pencil on engineering paper.

Conclusion

This section should briefly sum up the lab.

References

This section should list any references used, including web sites.

Common mistakes:

Poor organization

Poor grammar

Poor word choice

Usage of first person

Not proofreading the report before submission

Equation problems

- not numbered, or numbered incorrectly
- poorly or improperly referenced throughout the text
- subscripts poorly organized, if used at all (or mixed notation in the same circuit, i.e., Vs or v_s, R1 or r1, etc)
- subscripts repeated so as to be confusing – i.e., using R1 for different resistors in two circuits, or even for different resistors in the same circuit
- units ignored or used carelessly (i.e., 5v instead of 5V)

Figure problems

- not numbered, or numbered incorrectly
- poorly drawn or disorganized
- not referred to in text
- no axis labels on graphs
- no captions

Data presentation

- poorly organized tables
- unclear column headings
- no captions
- no description of the results