Writing Lab Reports

1. INTRODUCTION

Writing is very important to a successful engineer. Some Drexel students will go on to academic research positions and be involved with writing National Science Foundation proposals and technical papers. Others will be in industry writing their own proposals, budgets, papers, and reports. In either case, as an engineer you need to be able to communicate such things as the justification for your new product proposal or the importance and implications of your experimental results. The lab report format for this course is a mix of personal communications, as indicated by the memo format cover page, and technical communications.

The lab report format we will use is based on the IEEE style for transactions and journals. The style choice is a difficult one since the requirements and formats change for different audiences (managers, journals, conferences, etc.). Always be conscious of whom you are writing for, and what their specific requirements might be.

2. STYLE GUIDE

A. Cover Page

The cover page will consist of a memo from you to your supervisor (in this case your course instructor) giving an executive summary of the experiment. Do not exceed one page. A memo format page for Microsoft Word will be provided. The memo should include the course title and lab section, experiment title, date(s) performed, team members, the purpose of the experiment and what the significant results were.

B. Introduction

The introduction should include the goals or objectives of the experiment and any background material the reader may need to understand it. Since most of our work this term will be in circuits, you should mention what basic theories are being applied and, if space allows, give some detail. All equations should be typed and numbered, and referred to by number if necessary (Equ. 2).

My expectation here is two to three paragraphs plus whatever equations, graphs, etc. you might need.
C. Procedure

The procedure section should not repeat the lab instructions, and can just summarize them. Present the major steps performed, in chronological order. Ideally you should provide enough detail that your reader could replicate your results. Use a paragraph structure rather than an outline or table. If you deviate from the given instructions, explain why.

If circuit measurements were involved, it would be appropriate to include a diagram of the apparatus giving the make and model of all hardware involved.

My expectation here is for two to three paragraphs plus any diagrams needed.

D. Results

In the results section you will generally be presenting the results of calculations and simulations. However, the use of words here is very important to tie your results together and provide a summary. Proper use of tables and graphs will also be important (see below for formatting instructions). Only include figures and tables that are necessary for communicating your results, and describe the importance of each one with a sentence or two. Raw data and sample calculations should be put in appendices.

E. Conclusions

The conclusion should quickly summarize what you now know as a result of this experiment. The evidence in your results section must support all of your conclusions. In many cases the conclusions may only be one paragraph.

F. References

The references should include any outside reading you had done, beyond the lab manual. Consult the IEEE Information for Authors document for reference formatting assistance.

G. Appendices

The appendices will include items that are too large or too detailed to appear in the body of the report. This would include items like sample calculations, raw data, and whole page figures or schematics. Information in the appendices must be referenced in the body text (see Appendix 2).
**H. Format Specifics**

All lab reports must be typed. The only acceptable handwritten submissions are sample calculations. The reports should be on 8.5 x 11” paper with 1” margins all around. All pages following the cover page memo should be numbered in sequence beginning with page number 1. Text should be in a 12 point font and double-spaced. Times New Roman or Sans Serif fonts are recommended for IEEE papers. Proper grammar and spelling are important, so use your word processor to check them before submitting your report.

Recommended Table Format

1. Tables should be simple, clean, and free of elaborate detail.
2. Always double-check to make sure the data are correct.
3. All tables should be mentioned in the text as (Table 4) or (see Table 4), not as “see the table below”.
4. Column headings are italicized
5. Text may be single spaced
6. All table labels should be numbered consecutively (Table 1, Table 2, etc.).

Example Table

<table>
<thead>
<tr>
<th>Node</th>
<th>Voltage (V)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10.0000</td>
</tr>
<tr>
<td>2</td>
<td>7.9545</td>
</tr>
<tr>
<td>3</td>
<td>1.9697</td>
</tr>
<tr>
<td>4</td>
<td>9.8485</td>
</tr>
<tr>
<td>5</td>
<td>15.5300</td>
</tr>
</tbody>
</table>

Table 2. PSpice-generated small signal bias solution for the resistor network of Fig. 1

Recommended Figure Format

1. All figures included in a paper should be necessary for understanding the results.
2. Figures should be simple, clean, and free of elaborate detail.
3. Always double-check to see if data have been plotted correctly.
4. All figures should be mentioned in the text as “(Fig. 1)” or “(see Fig. 1)”.
5. Figures should be included in the body of the text, with the exception of full-page figures such as Capture CIS schematics.
6. On graphs, show only the coordinate axes or at most the major grid lines
7. Do not put boxes around figures to enclose them
8. The figure label should begin with “Fig.” and a figure number followed by two spaces, not “Figure”.
9. All figure labels should be numbered consecutively (Fig. 1, Fig. 2, etc.).
10. The dependent variable is plotted on the Y-axis, and the independent variable is plotted on the X-axis.
11. Clearly label each axis with respect to what was measured, quantity measured, and units in which the quantity was measured.
12. Make sure that the scale points on each axis have equal intervals.

Sample Figure

![Sample Figure Graph]

Fig. 7. Gain for the cascaded RC filter network of Fig. 2.

I. Annotated Bibliography


