Report Faux Pas

By:
Professor Emeriti James Thorpe

Revised and edited by:
Associate Professor Bob Rost

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1. Introduction

The following comments are based upon many reports submitted to the Mechanical Engineering Program Faculty over many years. We hope they will be helpful to you in writing reports.

The availability of computers should make report writing easier and less tedious. Spell checkers, automatic table of contents, automatic renumbering of sections and subsections, and the ability to import figures and write equations gives you the opportunity to write reports which are professional in every sense of the word. The faculty expects no less from you. This report was written using Microsoft Word.

2. Reports

What is a report? It is, first of all, a set of 8 ½ by 11 typewritten sheets that are bound together in some manner and placed in a cover. The title should be on the cover along with the date completed and the name(s) of the author(s). This title page should also appear inside the report as the first page.

While the reports that you will write during your undergraduate experience will vary based on the assignment, these guidelines should help you write good reports.

The report must have a table of contents, a list of figures and a list of tables. Every figure must have a figure number and a figure caption. Every table must have a table number and a table caption. Every page in the report must have a page number. It is a good idea to include a revision date (and even time) in the header. And, every important equation must have an equation number in () to the right of the equation. All equations should be centered on the page and there should be a list of symbols used in the equations at the beginning of the report.

Finally, the report must be organized in some fashion with respect to major and subheadings and with respect to tense and references.

2.1. Table of Contents

A table of contents is important so that the reader of the report can find information quickly and efficiently. If your document is constructed properly, the text-processing program will automatically generate the table of contents. In Word, you must use the built-in heading styles when you generate the document. Then, with the cursor at the location you want the table of contents, on the Insert menu, choose Index and Tables and then click Table of Contents tab. Use the on-line help feature to familiarize yourself with this feature.
2.2. Figures

Figures should be included "in-line" in the document after, but as close to, the first reference to the figure. Each figure should be numbered at the bottom of the figure and should include a caption that explains the figure. Figure 1 was generated in MATLAB, copied to the clipboard and then pasted into the document.

![Sample Plot imported from MATLAB](image)

**Figure 1. Sample Plot imported from MATLAB**

Word will automatically generate a list of figures. You must use the caption option to label the figure. Select Insert then Caption to label the figure. Then, generate a list of figures in the same manner as the table of contents.

2.3. Tables

Tables are an effective means of presenting data in a concise format that can be easily understood. Tables should be included "in-line" in the document after, but as close to, the first reference to the table. Each table must have a table number, normally above the table, and a table caption. Again, your text-processing program should have easy table generation.
Table 1. Coefficients of a polynomial curve fit.

<table>
<thead>
<tr>
<th></th>
<th>a_3</th>
<th>a_2</th>
<th>a_1</th>
<th>a_0</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-5.0000</td>
<td>-2.0833</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.0000</td>
<td></td>
<td>-10.0000</td>
<td>2.0000</td>
</tr>
<tr>
<td></td>
<td>0.0000</td>
<td>1.0000</td>
<td></td>
<td>2.0000</td>
</tr>
</tbody>
</table>

Word will automatically generate a list of tables. You must use the caption option to label the table. Select Insert then Caption to label the table. Then, generate of list of tables in the same manner as the table of contents.

2.4. Page Numbers

Every page in the report, except the title page, should be numbered, consecutively, from one to the last page. A common format is to number the pages at the bottom, center of the page in the footer. Modern text-processing programs will number pages automatically by simply inserting page numbers.

2.5. Revision Dates

Many times, reports are written by several people, working on different sections, simultaneously. It is very helpful to have a date (and even time) printed on the report. This is most conveniently done in the header.

2.6. Equations

Often, a report will need equations to defend certain statements in the report. Only those equations necessary should be in the main body of the report. Derivations should be included in an appendix. Equations should be numbered and are normally centered. Equation 1 is a statement of Newton’s 2nd Law.

\[
\vec{F} = \frac{d(m\vec{v})}{dt} \tag{1}
\]

Where:

\[ \vec{F} \] - Force in pounds (lbs.)
\[ m \] - Mass in slugs
\[ \vec{v} \] - Velocity in in/sec
\[ \frac{d}{dt} \] - Time rate of change
2.7. List of Symbols

For long reports that contain many equations, it is helpful for the reader to have a list of symbols. The list of symbols is included at the front of the report after the table of contents and list of figures and tables.

3. Tense

Do not use the past tense except in unusual circumstances. Use the present tense; it is more dynamic and aggressive. Use expressions such as "… uniform wear theory is used to calculate…" rather than "… uniform wear theory was used to calculate…"

4. Referencing

Do not use superscripts for referencing in an engineering report. Instead, place a number in square brackets [1]. Place an asterisk on the first appearance of a reference citation and use a footnote (see below) to explain your method of referencing. Always start with number 1 and continue in numerical order. In the reference itself (at the end of the report in a separate section) give authors name(s) first, the name of the book or paper, underlined, the publisher, edition and the page number(s). Examples are given at the end of this report.

Do not place references as footnotes unless you are going to have only one or two references in the entire report.

5. Organization

Always start your report with an introduction that explains how the report is organized and about what was done (briefly). At the beginning of the report should be a summary of the important findings or results. You are not writing a novel. Present your findings and the justify them. Do not present your justification first. Brevity is important.

In general, don't waste time and verbiage on how you did something. Your reader is more interested in knowing what you did rather than how. And, they want to know quickly and succinctly what you did. Don't turn them off with a bunch of extraneous stuff. Your reader is not interested in how you organized your team; they want to know what your conclusions are and what you did.

* Numbers in square brackets designate references listed at the end of the report.
Be sure to start with the positive. Do not start by telling your reader the options that you
did not choose. Start with your results and then defend them. Only after you have
presented your idea should you discuss alternatives that you did not select.

Know your audience and be sure your pertinent results can be found by anyone who
might read your report. Communicating your work is one of the biggest failures of
engineers.

Do not "fill" your report with pages upon pages of data, output from a computer code or
other types of filler. If part of the report is the generation of computer code, source
listings should be in an appendix.

6. Errors

There is probably nothing worse than errors in a report. Errors can lead to accidents and
liability! If you are uncertain about results, theory, calculations, etc., have someone go
over your work and have it checked. Review your work carefully before submitting it.
Errors are often a result of hurrying.

6.1. Misspelled Words

Modern text-processors have almost eliminated misspelled words. However, there is
nothing that causes doubt in the reader faster than misspellings. Also, your spell checker
will not be able to identify some of the vocabulary of engineering. You will need to
teach your spell checker the proper spelling of those words that are unique to the field.

What spell checkers will not catch is words that are spelled correctly but are misused.
Grammar checking has become better, but does still not check everything.

7. Conclusions

Not all of these comments will be relevant to every report that you write. Some reports
may be as short as one page and will not require the title page, table of contents and
references. However, these comments should give you direction as you write reports.

8. References

   2 -5.


**A. Appendices**

In general, long calculations, computer code, raw data, large numbers of plots, etc. do not belong in the body of a report. If they are necessary for completeness, they belong in an Appendix. When included in the body of the report, they disrupt the flow, distract the reader and make the report hard to read.