

The Formal Report

Formal reports contain information with more detail and content than the shorter report forms (memo). A formal report is usually submitted at the end of any major investigation. Many companies have a standard form that is to be followed when writing a formal report. For the purpose of this lab or course, the following elements of a formal report are to be included:

1. Title Page (**optional** – does not have to be on a separate page)
2. Abstract
3. Table of Contents (**optional**)
4. Introduction
5. Theory
6. Procedure
7. Discussion of Results
8. Conclusion and Recommendations
9. Appendix (**optional**)
10. References

1. Title Page

Optional, not necessary if the report is relatively short (6 pages or less).

2. Abstract

The abstract contains only enough information about the work reported on to enable someone who is searching for information to quickly determine the relevance of the report. Therefore, the abstract should contain a concise summary of the problem, important findings (results), and significant conclusions and recommendations. The abstract is usually limited to approximately 100 words. The abstract must be useful, independently of the report (**no reference to figures or tables**). Nothing should be in the abstract that is not in the report and nothing should be omitted from the report because it is in the abstract. The abstract is often reproduced, circulated, published, and filed independently of the report.

3. Table of Contents

Optional, not necessary if the report is relatively short.

4. Introduction or Background information

The purpose of the introduction is to prepare the reader for the body of the report by giving a clear statement of the background and objectives of the report, elaborate as to why the work is significant, and provide historical context regarding the work. All statements should be clear and complete because the reader may be less familiar with the subject matter than the writer.

5. Theory

If the discussion of theory and engineering principles involved is not extensive, it can be included in the procedure; otherwise, include a separate section.

6. Procedure or Description of Work

Experimental equipment and techniques should be described accurately and completely so that someone else could repeat your work. Drawings are appropriate. Give normal dimensions of test specimens, range of variables, and a list of constraints on the experiment (such as fixed parameters). Important mathematical expressions used in the work should be presented or referred to here.

7. Discussion of Results

This is a major part of your report and will vary in scope, length and complexity according to the nature of the investigation. Basically, the discussion evaluates the results, interprets them and investigates their significance. It is the bridge that leads from the results, (tables, graphs, etc.) to the conclusions. The statement of general conclusions and recommendations is reserved for the Conclusion and Recommendation section.

Use tables and graphs to highlight significant results. If the results are not extensive, they may be placed within the discussion text. **All graphs and tables should be referred to in the text of the discussion.**

The discussion should include:

1. Major inconsistencies.
2. Your interpretation of the tabular and graphical results.
3. Error sources and possible corrections.
4. Comparison of results with published values.
5. Equipment failures.
6. An accounting for unexpected results.
7. Comparison of test with standard tests.

Tables

Tables are useful to present results in the text of the discussion. Refer to **tables by number**. Every table must be mentioned in the text. Include on each table:

1. A number and title.
2. Labels for all rows and columns.
3. Units for all rows and columns.
4. Identification of all symbols.

Figures (graphs, diagrams)

Only use graphs if they supplement, complement, simply or clarify the text. If they do not do this, then they probably should be omitted. Use Excel for all graphs.

8. Conclusions and Recommendations

Be brief and to the point about making conclusions and recommendations. You may list the important results.

9. Appendix (optional)

The appendix contains:

1. Sample calculations.
2. Supplementary data.

Each item in the appendix has an identifying letter which is listed either under "Appendix" in the Table of Contents, or on a special table of contents preceding the appendix. Every item in the appendix is keyed to the text by a specific reference to the item by letter. Whenever possible, the order of items in the appendix should be the order in which they are referred to in the text.

10. References

The original sources of any literature referred to in the report should be provided. The references are usually listed in order of reference within the text. **There are several ways to format references, please be consistent.**