

Information on Writing Project Reports

(Adapted from P. Barkan of Stanford University, ME 210 notes 1986-87)

Here is some information that will hopefully be of use to you in organizing and writing an engineering report.

Suggested Outline:

- Title Page
- Abstract
- Acknowledgments
- Table of Contents
- Nomenclature (if applicable)
- Executive Summary
- Introduction
- The Solution
- Analysis and Performance Results
- Discussion
- Conclusions and Recommendations for Future Work
- References
- Appendices

It is critical that you develop an outline of your report at the outset. I suggest taking the outline above and adding main points, subpoints, and supporting information. Keep working with the outline until you have a clear, well-organized, and complete flow of ideas and facts.

Make sure you think through as you develop the outline which figures, illustrations, drawings, graphs, tables, etc. should be included in your report, and indicate in the outline where they should go. Refer to Figure ES-1 in the [Executive Summary](#) to see how to make a proper figure. Note that all elements such as figures, tables, etc., should stand alone. That is, they should all have some means to refer to them (such as a figure number, e.g., Figure 1), they should have a title, and they should have a descriptive sentence that tells the reader what significance the information has.

Amplification on Components of the Report

Title Page

The Title Page clearly identifies the following elements:

- Title of the project
- Author(s)

- Entity for which the project was done (e.g., San José State University, Department of Mechanical Engineering, ME 195, etc.)

- Date

Abstract

The abstract provides the following information (ASME Manual, MS-4):

- A clear indication of the objective, scope, and results of the paper so that readers may determine whether the full text will be of particular interest to them.
- Key words and phrases for indexing, abstracting and retrieval purposes.

The abstract should NOT attempt to condense the whole subject matter into a few paragraphs for quick reading. Essentially, the abstract answers three questions: What did you do? How did you do it? What did you find? Refer to the attached [abstract](#) from Furman, 1991 and the [ME 120 Laboratory Report Guidelines](#) for examples.

Acknowledgments

It is very important to recognize the contribution of others to the success of your work. Design is never done in a vacuum! Be thoughtful about how others helped you achieve success. Common areas are:

- Project sponsorship or financial support
- Donations of equipment, supplies, etc.
- Technical help
- Other help of a significant nature

Refer to the attached [acknowledgment](#) from Furman, 1991.

Nomenclature

The nomenclature section lists any symbols, variable names, etc. and shows what they stand for. Lettered symbols come first, in alphabetical order. Greek symbols come next, in alphabetical order.

Executive Summary

The executive summary is a brief, concise summary of important information, intended for specific readers who want to know, but don't have the time, patience, or energy to slog through a rambling, obscure report. Refer to the attached [Executive Summary](#) from Furman, 1991.

The executive summary answers the following questions:

- What is the problem?
- What is the solution of the problem?
- What actions are recommended or have been taken?

The executive summary must be:

- **Brief.** The executive summary is generally not longer than a few pages, unless figures make up a significant portion.

- ***Crisp***: Words and sentences must be relevant to the subject. Avoid filler and verbiage that doesn't add important information.
- ***Readable***: The executive summary should be organized and formatted so that the reader can quickly extract the essential information. Use ample headings and subheadings to form a clear outline of the subject that can be readily understood by the reader. Multiple points or features should be tabulated or bulleted (for example, this list). All statements in a common tabulation must have the same grammatical structure.
- ***Well-illustrated***: Figures must have brief, self-explanatory titles with text that explains the significance of what is shown. Figures should be integrated into the text, not grouped together at the end. If figures are included in landscape mode (i.e., ones that use the long direction of the paper from right to left), they should be oriented so that the figure title is adjacent to the outer edge of the report, not adjacent to the binding.

Introduction

The introduction presents the following information:

- ***Background of the problem***: The background sets the stage, provides context, and explains the need for the Solution.
- ***Functional specification***: The functional specification clearly spells out in quantifiable terms how the solution must perform.
- ***State-of-the-art review***: The state-of-the-art review summarizes prior and related solutions to the problem. For example, patents, journal papers, reports, etc.

The Solution

This section clearly presents the solution to the problem. It is critical that this section contain sufficient illustrations, drawings, photographs, etc., to fully communicate the solution to the problem.

Analysis and Performance Results

This section presents results of testing and modeling of the solution. Graphs, charts, tables, etc., should be used and described to clearly show how the solution performs relative to the design specifications.

Discussion

This section reflects on the performance of the solution and interprets the meaning of the information presented in the previous section. Discussion on failure modes is appropriate in this section.

Conclusions and Recommendations for Future Work

This section summarizes the meaning of your results and outlines what could be done in the future to carry on development of your work. In other words, answer the questions, "So what?" "What are the implications of your work?" "What more could be done on this problem?" Etc. If you are writing an interim report, it would be appropriate to include and discuss your schedule for future work in this section. Use a heading like, 'Schedule' for this sub-section.

References

The references should list all literature, catalogs, interviews, etc. that have been used in the project work. You may either list references in alphabetical order (see References below) and cited as done in the section on the Abstract or Executive sections of this document, or you may number each one and cite the number in your text.

Appendices

The appendices contain details and other relevant information that are important to the project, but would otherwise bog down the flow of the report if included in the main sections. For example:

- Alternative design approaches and evaluation
- Supporting analyses
- Detail drawings
- Material specifications
- Details on testing procedures, apparatus, and raw test data
- Supporting information, such as catalog data, etc.

References

American Society of Mechanical Engineers, ASME Manual, MS-4, "An ASME Paper," New York, New York.

Furman, B. J., "A New, Thermally Controlled, Non-Contact Rotor Balancing Method," Ph.D. Dissertation, Stanford University, 1991.

Furman, B.J., ME 120 Laboratory Report Guidelines, Department of Mechanical and Aerospace Engineering, San Jose State University, [online at: <http://www.engr.sjsu.edu/bjfurman/courses/ME120/me120pdf/ME120labreportguide.pdf>], 2004.