

Writing Engineering Design Reports

The structure and process of writing a Design Report

Design Report writing is an important skill for engineers. The purpose of the Design Report is to prepare you for your future profession.

Although this brochure outlines the key features of a Design Report, always check whether your lecturer, or client, has specific requirements.

Design Reports are complex because they reflect the final results of detailed research, often undertaken over an extended period. Yet, little of this detail is included in the body of the report.

The report itself includes summary information, including the rationale behind critical decisions leading to the recommendations. However, there is a place for the detail: the Appendix, where it can be accessed as needed.

The Design Report, therefore, gives the reader access to 3 levels of information:

- *A Summary*
- *The Introduction, the Analyses sections, the Conclusion*
- *The Appendices*

Important prerequisites for writing a good laboratory report:

- understanding the purpose of the report,
- providing your reader with a clear map of your report,
- writing up your outcomes and recommendations in appropriate descriptive and summary vocabulary,
- using well-designed explanatory charts and clear equations.

Clear structure

The following are all key elements of a clearly structured Design Report.

Title page: title of project, client / lecturer / tutor, date, your name and student ID.

Summary: the summary page (level 1) sets the problem in context, summarises what you have done, and

provides the key outcomes and recommendations

Table of contents: this page clearly outlines each part of the report using section headings and page numbers (Use Word heading style for consistency in your document).

Introduction: the introduction (level 2) introduces and situates the problem being addressed and discusses any previous research in the area.

Analysis section/s (often given a specific title): you need to provide a summary walkthrough of the analysis which led to your recommendations.

Keep it simple, use only key charts and equations, and restrict it to 3 – 7 pages in length.

Note that the detail (e.g. raw data) should be placed in the Appendix section.

Conclusion (and recommendations): this should give a brief summary of what you have done and include your recommendations.

References: this is a list in standard form of all the books, web sites and resources you have referred to in the report.

Bibliography: a wider reading list of other books and resources you used but did not refer to directly in the report.

Appendices: you may have more than one appendix which will describe in detail, if necessary, the analyses you have undertaken for the brief and the data you obtained.

Place your work in a Design Folder: many lecturers recommend you maintain a design folder in which you keep a record of the work undertaken for the brief.

Uses section markers to help you with the summary process.

Remember the cover sheet.

Academic Skills

Writing up your Design Report

Questions to answer before you start writing:

- *Have you clearly understood the brief?*
- *Do you clearly understand the context of the brief?*
- *Do you clearly understand the processes you have undertaken to fulfil the brief?*
- *What knowledge do you need to complete this task?*
- *What type of analyses have you undertaken?*
- *Have you clearly expressed the results of your research in clear charts, diagrams, graphs or equations?*
- *Have you considered the different purposes of each section of the report?*
- *Have you written your summary report in clear and precise language?*
- *Have you used the appropriate and relevant vocabulary?*
- *Does the layout of your report clearly map the progression of your research and the results?*

Further Resources

<http://www.sussex.ac.uk/engineering/1-3-11-1.html>

http://stargate.uwaterloo.ca/~jzelek/teaching/syde361/report_writing.pdf

The Design Report production process

Your report will be based on the work you have undertaken beforehand. You will be working and thinking in many different ways. The following list outlines the processes you will probably go through.

Beginning

- Meeting with the client/supervisor
- Understanding the Project Brief

Planning the Project

- Understanding the scope of the project Deciding on the participants
- Starting the project file
- Creating the project plan

Researching Possibilities and Process

- Investigating similar problems, research issues, possible solutions
- Identifying selection criteria for choosing the best solution

Considering Alternatives

- Being creative in seeking solutions
- Identifying possible solutions
- Documenting the alternatives

Evaluating Alternatives

- Evaluating the alternatives against the selection criteria
- Choosing a justifiable option
- Justifying your choice

Writing your Final Report

- Summarising all steps of the process
- Identifying the preferred option/s
- Explaining your choice

Submitting your report

- Placing your report in a ring binder with separators marking each section.
- The report should be ready to be audited at any time.

Academic Skills