

Lab Reports

Introduction

A laboratory report precisely records the procedures followed in conducting a laboratory experiment. Engineering and science students are frequently required to write laboratory reports for class; however, different disciplines, courses, and professors seem to require different formats and styles.

In addition, different kinds of laboratory experiments are often reported in different ways. It is, therefore, impossible to describe one right way to compose a lab report; however, you may be able to adapt the following general lab report format to your particular situation, according to the lab work you are doing and the preferences of your professor and/or TA.

Content & Format

A laboratory Report typically consists of the following elements in this order:

1. Title Page
2. Abstract
3. Introduction
4. Methods and Materials (or Equipment)
5. Experimental Procedure
6. Results
7. Discussion
8. Conclusion
9. References
10. Appendices

Title Page

The title page provides the **name of the lab** experiment, the **names of the lab partners**, the **date**, and any other information your instructor requires.

Abstract

The abstract should be a precise and specific summary of the entire report, consisting of one, concise paragraph of about 100-200 words.

As distinguished from the introduction, the abstract tells the reader what will be done and lays the groundwork. Hence, you cannot write the abstract until after you've completed the report.

Before writing the abstract, it is often helpful to summarize each section of the report (introduction, methods and materials, procedure, results, discussion, and conclusion) in one sentence. Then try to arrange this information into a short paragraph.

Keep in mind that the abstract summarizes the report itself, not the actual experiment.

Introduction

Whereas the abstract summarizes the whole report, the introduction presents the subject of the report and acquaints the reader with the experiment. Typically, the introduction states the problem to be solved or the experiment to be performed and explains its purpose and significance. It also provides whatever background theory, previous research, or formulas the reader needs to understand and perform the experiment (or solve the problem). Usually, the instructor does not want you to repeat such information verbatim from the lab manual; you can simply make the appropriate references to the manual.

Methods and Materials (or Equipment)

This section can consist of a list. Be complete, accurate, and precise.

Experimental Procedure

This section is a full descriptive narrative. Be complete, accurate, and precise, listing all steps in the correct order. State what you really did and what actually happened, not what was supposed to happen or what the textbook said.

Results

Describe your actual results, not what should have happened. Although results are usually presented quantitatively, you should always introduce each block of information verbally and provide clear and accurate verbal labels.

Discussion

In this section, you must explain, analyze, and interpret your results, being especially careful to explain any errors or problems.

This is probably the single most important part of the report, since it is here that you demonstrate that you understand and can interpret what you have done.

Conclusion

Conclusions are drawn from the results and discussion; conclusions answer the question, So what?

In this section, you also explain your conclusions, and you may also criticize the lab and make recommendations for improvement. Such criticisms and recommendations, however, should focus on the lab as a learning experience; mere complaints about faulty equipment or amount of time spent are not appropriate.

Note: The results, discussion, and conclusion sections can be combined in various ways. Use whatever combination is most appropriate for your situation

References

Some reports require references at the end. Use the correct forms for the particular field you are working in. Always consult your instructor about reference forms, and check a style manual for the field.

Appendices

Appendices may include raw data, calculations, graphs, and other quantitative materials that were part of the experiment, but not reported in any of the above sections. Refer to each appendix at the appropriate point (or points) in your report. For example, at the end of your results section, you might have the note, "See Appendix A: Raw Data Chart."