

FORMAT OF LABORATORY REPORTS

The following is a description of the basic format of the laboratory reports written for this course. The essential components of each section of the report are itemized. In addition, a short paragraph describing the more qualitative aspects of each section is given.

Title Page

Include at least the title of the experiment, the date, your name and the names of the members of your group, the name of your teaching assistant and the laboratory section number.

Abstract

Summarize the whole report. The abstract should be brief and yet cover all major points made in the report: the objective, procedure, major findings and your conclusions.

A good abstract should give the reader a substantial overview of the subject of the report. Often this might be the only part of your report many people will ever read. If the work appears to be interesting or relevant then the reader might read the whole report or recommend it to those who could benefit from it.

Introduction

Describe briefly the nature of the phenomenon which was investigated in the laboratory. This might be based on information obtained in the lecture, your own reading and experiences from every-day life. Above all, be sure to state clearly the objective of the investigation.

A good introduction will orient the reader to the particular subject your investigation deals with. It might begin with fairly general statements regarding the state of the art, the history of the subject, relevance to current issues, etc., but will always end by focusing the readers attention on one particular question, the objective of this investigation.

Procedure

Describe how the investigation was carried out. This should include descriptions of the specific equipment used, the specific materials (composition, form, processing) that were tested, the critical parameters of each experiment and instances where special care was taken to ensure success of the experiment. Diagrams of the experimental setup can be useful here.

Written properly, any other qualified engineer or technician would be able to use your written procedure to reproduce your results. The key to writing a good procedure is to include all of the essential details but not so much detail that the procedure reads like a personal journal. Another pitfall to avoid is writing the procedure as if you were instructing someone on how to do the experiment. Remember, you are telling the reader about an experiment that has already been done.

Results

Present the results of your investigation. Organize your figures and tables, giving each a number for ease in referring to them and a caption so that each can, to a limited extent, stand on its own. In

the text of this section of this report you will guide the reader through the data, pointing out those results which lend credibility to the investigation and those upon which you will base your conclusions.

It is not enough to simply staple your figures and tables to the report. The reader will need help in recognizing which results most important and what the results in general show. Otherwise, the reader faces the job of sifting through your results just to come to the point so the reader can follow the discussion, something you should have already done. Also, you should be selective in your use of figures. Not all figures need to be included in the report. One test of whether a figure or table should be in the report is to ask yourself if it is needed to support something you actually wrote about in the report. If not then it should stay in your laboratory journal or, if you are sure it will be useful to the reader, it can be included in the appendix.

Discussion

This is the most important section of the report. This is where you take the results you just presented and give them meaning in terms of the stated objective of the investigation. You must develop a logical argument as to how the results support your conclusions. You'll have to account for any discrepancies in your results and anticipate, perhaps even consider, alternative explanations.

A good discussion will take the reader from the point where they have just seen your major results, through a critical and logical analysis of these results, and up to the point where you are about to state your conclusions. At this point the reader will probably already have drawn their own conclusions which, hopefully, will be the same as yours.

Conclusions

Clearly and succinctly state your conclusions. Avoid continuing the discussion. If your discussion was logical and complete it will not have to carry over into the conclusion. You may however, wish to comment on the significance of these new findings: how they might be used, which experiments should be done next, etc.

Appendices

Include any raw data from the experiments (printouts, photographs, etc.), additional data (from the literature, handbooks, etc.), derivations or calculations which might be help the reader who wishes to see additional details pertaining to the report.