

Helpful instructions on how to write a mechanics lab report

Although your report should only be at least one and a half page, I've decided to list a few helpful instructions for you to organize your reports efficiently. The lab report should contain the following sections: title page, abstract, results, discussion, conclusions, appendices and references. A type-written copy of the report should be submitted for each lab.

TITLE PAGE: This page should contain

- The title of the lab
- The names of lab partners
- The date when the lab was conducted

ABSTRACT: The abstract is a summary of the contents of the report. It is therefore, a concise statement of the objectives of the test, and highlights of the lab results, discussion and conclusions. The experimental procedure should not be included in the abstract. Although the abstract is the first section in the report, it is best to write it last- after you have finished plotting all the graphs, analyzed the data, and written the discussion and conclusions.

EXPERIMENTAL PROCEDURE: Describe in detail the procedure used to conduct the lab. For instance, what type of machine was used for testing, what did you measure in the lab, what did you measure those quantities with, etc.

RESULTS: The results are best presented in Tables, Graphs, Charts or Figures. Label all graphs completely with: main title; axes labels, including appropriate units for the variables; etc. Identify each table or figure with a number e.g. Figure 1, Table 2A, etc. Use computer generated graphs and tables for describing results.

DISCUSSION: This is the most important part of your report. In engineering testing, more often than not, the measured data will not be in exact agreement with the expected theoretical results. There are usually two types of errors:

- (a) Theoretical results are based on analytical models. In order to solve mechanics problems, it is necessary to make some assumptions. The more the actual physical system differs from an analytical model, the greater the experimental error. Your discussion should explain the scientific basis for any differences between the actual experimental results and those predicted from theory.
- (b) Error due to measurement devices used or test environment.

Do not blame everything on "human error." Moreover, you should strive to find ways by which such errors may exist and may be eliminated in future tests. This is one of the keys to being a good experimentalist. Therefore, recommendations for the improvement of the experimental procedure or results, or any other aspect of the experiment should be included in this section.

CONCLUSIONS: Consider questions such as these in discussing your conclusions: What did you learn as a result of spending several hours on the lab? Were your original objectives met, or did you discover something else?

APPENDICES: Include a separate appendix for every major item that is too distracting to include in the main report. Anything that could interrupt the flow of thought in the main report, but which is nevertheless important for a thorough understanding of the experiment, should be placed in an Appendix. Give a list of equipments used and their model type & make in the appendix.

REFERENCES: Citations of relevant theoretical background material and other related work should be included in the reference list.