

Lab Report Guidelines

Each lab has specific requirements given in the lab procedure. The lab report should address the specific requirements, and follow the general guidelines described here.

A lab report should have the following format:

Title page with the lab title, student names and date

- 1. Introduction and Objectives**
- 2. Methods and Results**
- 3. Discussion and Conclusions**

The **Introduction and Objectives** section should include a brief description of the lab, and a summary of the lab objectives. What are the goals of the lab experiments? What are you trying to find out, or what are you trying to accomplish?

The **Methods and Results** section is the main part of the lab report. The experiments should be described in sufficient detail so that another engineer reading the report would be able to repeat your work. Specifically, for each Task in the laboratory include all of the components that apply to the Task:

- Reference to the Lab Task, e.g. “Lab 1, part A.1.1. Square Wave”
- All relevant analysis and simulation results
- Detailed circuit diagrams of experimental circuits *annotated with relevant signal names, component names and values*. You may use LTspice, Altium, or any other software of your choice to produce circuit diagrams.
- Relevant equipment setup data: a brief description of which piece of equipment was used and how.
- Experimental results:
 - Scope waveforms (screenshots) should be annotated with signal names matching the signal names in the schematics, and scales (volts/div, and seconds/div), as well as measured important features of the waveform (such as peak value, peak-to-peak value, time delay, etc.)
 - Numerical results (you may use Excel) should be presented in graphical format, with clearly labeled axes and important features of the plots. A table of measurement data tables should be included in an Appendix at the end of the report.
 - Calculations, data analysis, comparisons to simulation results, and comments related to the experimental results. Each plot or graph in the report should have a title or caption that clearly specifies what is shown in the figure. It is not sufficient to give references to parts of the lab procedure. For example, do not just say “Lab 1, part A.1.1”; give a full caption: “Square-wave voltage waveform generated by Agilent 33521A waveform generator: minimum value is $V_{min} = 0$ V, maximum value is $V_{max} = 2$ V, frequency $f = 1$ kHz, duty-cycle $D = 50\%$ ”

The **Discussion and Conclusions** section should be a brief summary of the lab results. Have the lab objectives been met? What conclusions can you draw? What are the limitations of the

experiments? What have you learned from the lab? Give suggestions on how the lab could be improved or what other experiments could follow. Also, be sure to answer any specific discussion questions asked in the Tasks of the lab itself.

In general, in all sections of the lab report, be neat, brief and precise. Quality is much preferred to quantity. Your audience is fellow engineers and you do not want to waste their time with irrelevant data, verbose statements, or incomplete schematics.

Messy reports will be returned without grading and will receive zero credit.