

Instructions for Writing Reports:

In the business world, writing reports and proposals are a regular part of the work of engineers, and you will have to learn to write to the expectations of the readers. In this course, your instructor will read your lab reports. Your reports must be typed using MS WORD. When writing your report, keep in mind the following suggestions:

Purpose: The purpose is to demonstrate to the instructor that you have learned the material and were able to carry out the experiment successfully.

Audience: The audience for your report is your instructor. Each instructor is an individual with particular likes and dislikes. However, the instructor is obligated to grade your report within the guidelines specified by this lab manual.

Economy and Elegance: You must select the right words and use them in an efficient manner. You are writing a report, not a novel – write concisely.

Spell Checker and Grammar Checker: If you are using a word processor that has a spell checker and a grammar checker, be sure to use them.

Sentences and Phrases: In general, you should use complete sentences when you are writing paragraphs, but phrases may be appropriate in tables and headings. Avoid writing in first person (don't use "I" or "we").

Pages and Layout: Use 8½" x 11" paper suitable for reports. Use 1" margins on all four sides. Use only one side of the paper and number the pages. For any text in paragraphs, use a 12-point font (preferably Times New Roman) with double spacing. This will provide the instructor with adequate space to write comments. You may use additional blank lines, larger text, bolds, and underlines, to label the different sections within your report. Don't use unnecessary blank lines just to make the report look longer.

Graphs: Use graphing software if possible. Excel and MATLAB software are available for plotting/analyzing data. PSpice is available for drawing circuits and simulating output signals. If you do not have graphing and drawing software, use straightedges (rulers). All graphs should be drawn in ink. The axes should be labeled clearly with units, and each graph should be given a descriptive title. Graphs should be inserted into the report so that they are easily read; i.e., so that the instructor does not have to rotate the report more than 90 degrees clockwise from a normal reading position.

Headings: A heading should identify each major section of your report. This includes purpose, procedures and results, discussion, summary, and appendix.

Presentation of Data: Do not hide your data inside paragraphs. Tables should be used when your measurements were taken at several settings. Any equations used for calculations should be given, with an appropriate discussion.

Structure of Reports:

Cover page: This is a separate unnumbered page. Include the following information:

Experiment Number and Title

Your Name

Partner's Name

Date of Experiment

Date Report was due

Date Report is being Submitted (Fill this in with pen at the time of submission.)

Purpose of the experiment: A short paragraph describing what you were expected to learn in the experiment. Do not include too many details, but be specific enough that the reader can understand the purpose of the experiment without reading the lab notes. General Guideline: approximately 3-8 lines.

Procedures and Results: Raw data and processed data **with text** to describe the tasks that generated the data. Include enough detail to let the reader know what was being measured and how the measurements were made. Draw all circuits constructed, and label any voltages/currents that were measured. Include equations used in any calculations. Use tables to present data whenever it is appropriate.

Discussion: This includes three kinds of information.

1. Comparison of experimental results with expected (theoretical) results. This should include a qualitative description (a general, descriptive assessment of how well your measurements compared with your expectations) and quantitative results in the form of percent errors whenever possible.
2. Sources of errors that may contribute to any discrepancies between the theoretical and actual results. This includes problems with the equipment, quality of the circuit assembly process, accuracy of the component values, stray interference, etc. Human errors should not be mentioned unless there were major errors in assembling the circuits and taking measurements. Ideally, all such human errors should be discovered and corrected before you leave the lab.
3. Conclusions that can be made from your measurements.

Suggestions: You may want to find a way to incorporate the post-lab exercises into the discussion. Do not force them into the discussion if they do not relate to the topics outlined above.

Summary: Brings the report to conclusion with a summation of the experiment. Do not present new results, and do not write an itemized list of things that you learned. In general, you should comment on: (1) what you learned in broad terms, (2) your observations in general terms, and (3) the significance of what you learned, etc. General Guideline: 5 to 15 lines.

Appendix: This is the information referred to in the body of the report.

1. A list of all equipment, including model makes and numbers. This will allow you to return to the lab and repeat your measurements if necessary.
2. Oscilloscope and computer printouts, which generally includes graphs, circuit schematics, and tabular data. Include titles and figure numbers. You should label the voltages on the oscilloscope printouts.

Grading of Reports:

1. Reports are due one week after the conclusion of an experiment, but consult the class schedule for the exact days. All reports will be graded on a 75-point basis. The grade sheet on the following page shows how the points are distributed.
2. Late labs reports will be assessed a penalty of 5 points per day excluding holidays and weekends. Reports turned in more than 3 weeks late will automatically receive a grade of zero, but **they must be turned in to receive a passing grade for the course.**
3. The first reports are usually difficult to write because you do not know exactly what to expect. Therefore, the first two reports are **team reports**, for which you are to collaborate with your lab partner, and turn in a single report.

Suggestion: While you will have one week to submit your lab reports, begin writing the procedures and results section shortly after you complete the experiment. Then, it will be fresh in your mind, and you will have plenty of time to finish and re-write the report.

Laboratory Report Grade Sheet

Name: _____ I.D.#: _____ Lab #: _____

<u>SCORE</u>				
0	1	2	3	Is the proper format used?
0	1	2	3	Does the report state a purpose that reflects all of the important points that should have been learned from the experiment?
0	2	4	6	Does the report include a discussion of theory and background, which is complete and concise?
0	2	4	6	Does the report identify and describe the key steps used in the experiment?
0	1	2	3	Is the method of taking measurements adequately described?
0	1	2	3	Is the type of test equipment used to take each measurement noted?
0	1	2	3	Are there schematics for all of the circuits used, with component values labeled?
0	1	2	3	Are all voltages or currents mentioned anywhere in the report indicated on the appropriate circuit schematic?
0	2	4	6	Is the data taken presented in a concise, logical manner?
0	1	2	3	Does the report include neat tables of data pertinent to the subject matter?
0	1	2	3	Does the report include clear, meaningful calculations?
0	1	2	3	Do all figures have titles?
0	1	2	3	Are all graphs properly drawn, with their axes labeled?
0	2	4	6	Are comparisons made between theoretical and experiment results with the percentage error calculated whenever possible?
0	1	2	3	Are reasonable explanations given for possible causes of the discrepancies between the theoretical and experimental results?
0	1	2	3	Were any significant differences between theoretical and experimental results resolved in the laboratory?
0	1	2	3	Does the report contain conclusions which are based on facts, and avoid vague generalities?
0	1	2	3	Is the information contained in the appendix referenced in the body of the report?
0	2	4	6	Does the report use proper grammar, sentence structure, and spelling?
0	1	2	3	Does the report follow logical thinking, fully cover the topic, and could it be given to a "higher level of management" as it is currently written?

TOTAL = **/75**