To: Instructor’s name

From: Student’s name

RE: Course number, project number or project title

Date: Date report is written (not the date the report is due!)

Summary

The purpose of this document is to provide a format guideline for reports. This document is not a template for laboratory project reports, but is meant to provide formatting examples.

Note: Specific laboratory assignments will require different sections of the report to be included. Unless a full report is required, only include the required report sections. The order of the sections must match the template. Each section must be formatted to match the template. (The summary is exactly that — a summary, primarily for managers. It should not extend onto the second page.)

Schematic

This section contains the schematic(s) of the circuit(s) constructed for a specific measurement (describe). Schematics must be computer generated using a CAD tool unless otherwise stated in the assignment. Schematics copied from the laboratory handout will result in severely reduced grades for the format and technical categories. A schematic diagram of the circuit that was tested in the laboratory is shown in Fig. 1.
Fig. 1. Caption the schematic in such a manner that by reading the caption and looking at the picture it is possible to completely understand the purpose of the schematic. The text in the schematic should not be smaller than the text in the report. Do not describe the circuit on a connection by connection basis.

**Data**

The following data were obtained from <description of the portion> of the laboratory project. All measured data must be presented in this section. Always use appropriate significant figures and units.

Table 1. This table is a specifically captioned table of data from a particular measurement. Captions consist of complete sentences. The table is centered and the columns are aligned.

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Calculated/ Expected</th>
<th>Measured</th>
<th>Percent Error (if applicable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantity 1</td>
<td>$X_1$</td>
<td>$Y_1$</td>
<td>$\frac{Y_1 - X_1}{X_1}$</td>
</tr>
<tr>
<td>Quantity 2</td>
<td>$X_2$</td>
<td>$Y_2$</td>
<td>$\frac{Y_2 - X_2}{X_2}$</td>
</tr>
<tr>
<td>Quantity 3</td>
<td>$X_3$</td>
<td>$Y_3$</td>
<td>$\frac{Y_3 - X_3}{X_3}$</td>
</tr>
<tr>
<td>Quantity 4</td>
<td>$X_4$</td>
<td>$Y_4$</td>
<td>$\frac{Y_4 - X_4}{X_4}$</td>
</tr>
</tbody>
</table>

 Anything of particular note regarding the data should be mentioned here, however, this is not an analysis or discussion of the data.
Fig. 2. This oscilloscope screenshot is an example of an image included in a report. The image is reduced in size, but not to the point that the text in the image is illegible for a normal reader. An oscilloscope image, for example, must be resized to a height of 3”. The image is centered.

Fig. 3. This is an example of a graph. The graph is large enough to be legible, and is center aligned. Note the graph has a descriptive title, the axes are labeled including units, and no legend is used for a single data series. If a graph is used to present data, there is no need to include a table of the same data. Again, the figure is centered.
Equation 1 is an example of a referenced and numbered equation. By using absolute references for equations, figures, and tables, the need for positional references, such as ‘below’ is eliminated.

\[ I_D = I_S \left( \frac{V_g}{V_r} - 1 \right) \]  

(1)

Discussion

This section contains an analysis of the data, in light of the purpose of the laboratory project. Quantities that are unexpected must be accounted for and discussed. The manner in which the laboratory project demonstrates a theoretical principle must be discussed. The discussion must be concise, to the point and use only formal language.

Any questions asked in the project handout must be answered here. Questions should not be restated. Instead, the answer must be stated is such a manner that the question being answered is obvious.

Remember that engineers use language in a precise manner. Words that can be used as synonyms in normal writing have specific technical definitions in an engineering context. For example, input voltage and supply voltage are fundamentally different.

Some other things to keep in mind:

• Use Greek letters and symbols (do not use an English transliteration or a word for the Greek letter).
• Use an equation editor for all equations.
• A lab is a room; you have completed a laboratory project.
• Formal language does not include contractions.
• Written language is more formal than spoken language. Do not use common abbreviations, such as max., min., or pre-lab in a written report. Use maximum, minimum, and pre-laboratory (or preliminary or initial) analysis.

• The pronoun ‘you’ is only used to address the reader of the paper and is usually inappropriate for a laboratory project report.

• Implied subjects can only be used when giving instructions and are most often inappropriate for a laboratory project report.

• Spell out words that have a colloquial abbreviation (e.g. use maximum rather than max).

• If there is a section of text in your report that you feel should be copied and pasted several times, evaluate whether the text is worth including at all. Copying and pasting sentences leads to at least two problems. First, the redundancy is annoying. Second, any typos are repeated over and over and over again. If it is something that needs to be said, it should go in a single strategic location.

• Notes about captions:
  o Captions should use full sentences.
  o Captions should add information not available from what is being captioned.
  o Captions should direct attention or call out important features of the captioned object.
  o Captions should be concise. Detailed explanations belong in the discussion or other body text. For example,

  Fig. X. This graph displays the input and output voltages of an inverting amplifier with a gain of -10 V/V. Because the power supplies to the operational amplifier were set to ±10V and the input signal to the amplifier was a 1V peak sinusoid, clipping of the output voltage is apparent.

  is a caption that provides extra detail without becoming a paragraph in itself.

• This list will expand as common or annoying errors are encountered.
References


Note that there is NO PERIOD after the URL.