# Basic Report Template

Firstname Lastname`<email11>`

T-411-MECH Mechatronics 1

RU Science and Engineering

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## List of Corrections

This template is heavily derived from one by Markéta Foley for the T-106-LIFV Molecular biology course.

The report is an group assignment. Each group must write their own report. You may discuss how to interpret the results of the experiment with your classmates, but the report must be written in your own words. If any part of your report is plagiarized (from another group, the internet, or anywhere else) or your references are not properly cited, you will receive a grade of zero on the entire assignment. This is in compliance with Reykjavík University's Code of Ethics[1] [2] [3]. For your reference, here is a link to guidelines defining plagiarism and discussing how to avoid it (from the University of Oxford):

`http://www.ox.ac.uk/students/academic/goodpractice/about/`

The report must be written in English in the form of a short technical communication. Use full sentences and paragraphs; the report should not be a collection of notes. The report should be in 11 or 12-pt font, 1.5 line spacing. This template document demonstrates some of the structure expected in the report.

The report must consist of the following sections:

## 1   Introduction

State the objective(s) of the exercise. Ask yourself: <u>Why</u> did I design/create the item? What did I aim to achieve? What is the problem I am trying to solve? How is my solution novel?

### 1.1   Background

Provide background about the subject matter (How was morse code developed? How is it used today?). Include the purpose of the different equipment and your design intent. Include references to relevant scientific/technical work and books. You must include at least one reference other than [1], the textbook.

If you have specifications or related standards, these must be described and cited also.

## 2   Design

How was your system developed? Where did the concept come from? If it went through multiple stages of design, describe them. Describe any assumptions you make about how the system will be used and its environment.

### 2.1   Requirements

What are the requirements for the system?[4] What is the strategy for meeting this requirements?

### 2.2   Limitations

If there are certain environments/conditions that your system is unable to reliably function within, describe them. Explain why these limitations do not cause it to fail your stated requirements.

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[1]`http://en.ru.is/the-university/ru-code-of-ethics/` – see Item 8 and General Rules on Study and Examinations

[2]`http://en.ru.is/studies/study--and-examination-rules/` – see Article 4.5

[3]see also the document "Your Work - Your Contribution" `http://www.ru.is/hugverk`, available only in Icelandic

[4]What is the minimum capabilities that are needed for "success."

| Feature | State | Explanation |
|---|---|---|
| Ball rolls down $30°$ slope | Pass | |
| Ball rolls up 10 stairs | Fail | Motor failed, replacement expected January 2013 |
| Ball stays inflated for 24 hours | Pass | |
| Ball floats in water for 24 hours | Pass | |

Table 1: Happy Fun Ball test results

# 3   Testing

What was your testing strategy? What kinds of tests were performed? Be very specific. How did your system perform? Make sure that there is a table/list indicating your system's quantitative performance. As a simple example, refer to Table 1

# 4   Usage

Who is the audience for your device? What knowledge/training does the person using your device need to use it? What further skills would be needed to develop your idea further?

## 4.1   Installation

How does the user install the software/hardware necessary to use your device? If they have to download software, make sure that the locations are here.

 If multiple steps are involved, make sure that they are clear and specific. For example:

1. Turn on the computer

2. Start windows 7 32-bit or 64-bit

3. Login as a user with administrator privileges

4. Start a web browser

5. Goto `http://sourceforge.net/projects/tortoisesvn/files/`

6. Install the appropriate version of TortoiseSVN for your platform. *Do not install version 1.7 if you use Solidworks!*

7. Reboot your computer

## 4.2   Instructions

How does the user use the device/software? What sorts of commands do they need to type? Are there things they should avoid?[5]

 If the users need to write additional code to use your system, make sure you give an example that works[6].

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[5]e.g. don't connect the power to ground or you will cause a fire

[6]For larger projects, you would create an Application Programming Interface (API). We may cover this later in the term, time willing.

Figure 1: The logo of Reykjavík University

# 5   Results and Discussion

In this section you discuss any issues that came up while developing the system. If you found something particularly interesting, difficult, or an important learning experience, put it here. This is also a good place to put additional figures and data.

*NOTE: Figures and Tables need to be properly formatted and referenced in the text. Number figures/tables consecutively, include captions, and refer to the figures/tables in the text e.g. Figure 1. Equations need to be numbered consecutively as well. Equations need to have each of their variables defined when they are first used or redefined. If you need to refer to particular places in the document, use numbered references. When you put a label command*

As an example of an equation, in Equation 1 is the relationship between angular frequency and hertz:

$$f = \frac{1}{T} = \frac{1}{2\pi\omega} \tag{1}$$

where $f$ is frequency in Hz, $T$ is period in s, and $\omega$ is angular frequency in $\mathrm{rad\,s^{-1}}$.

Note that the 5 and the must match when using 5, it has to be AFTER the item you are trying to point to or inside of it. It is often safest to put inside e.g.:

```
\caption{This is
    a caption\label{fig:mycaption}}
```

As an example of referring to a particular part of the document, the Limitations are in Section 2.2 on page 2

# 6   Conclusion

Summarize the key capabilities of your system. Be specific and state whether you met your original objectives/requirements. If you could not, explain why. How did you compensate so that you could still complete the system?

Finish the conclusion explaining why customers would care about this system. Put it into the context of how it might be used as a product.

## 6.1   Future work

In this section, you explain how you could further develop the idea/system to do more. Why would people be interested in these additions? Roughly how much work would it take?

# 7   References

List your references (journal articles, textbook pages, etc.). Use the IEEE citation style, referring to each reference with a consecutive number in the body of the text and listing the references in the same numerical order in the References section. Here is a link to a website describing the IEEE citation style (from the University of Canterbury):

`http://library.canterbury.ac.nz/services/ref/ieee.shtml`

Since you are using LATEX, you don't need to worry about how it is formatted. The formatting is taken care of by BibTeX or related tools. Read Chapter 7 of `http://afs.rnd.ru.is/project/htgaru/trunk/how-to-get-around-projects.pdf` The IEEETran.bst format file is included with the template, which is only needed if you are using BibTeX.

As an example of a citation, [1] is the textbook for T-411-MECH Mechatronics 1.

# References

[1] J. E. Carryer, R. M. Ohline, and T. W. Kenny, *Introduction to Mechatronic Design*. Pearson Education, 2011.

# A   Design documents

Put CAD drawings, additional sketches