

Recommendations for Master thesis report

1. Typically, you have text material from the planning report that you reuse to some extent in the thesis report. **Think about the tense!** In the planning report, you talk about what you are going to do, while in the final report you describe what you have done (typically you use the present tense or past tense).
2. In English, each specific **figure, table, chapter, section or equation is a proper noun** and should therefore be capitalised, e.g. 'see Figure 4' and 'in Section 5'. Note that if the reference is not specific, it should not be capitalised, e.g. 'bla bla in the next figure.'
Actually, the principle of capitalisation is also applicable to names in general, such as Case 1, Case 2, etc.
3. When we refer to something in Swedish, we generally use commas: 'bla bla, see Figure 4'; in English, we generally use parentheses instead: 'bla bla (see Figure 4)'.
4. The first time an **abbreviation** is used, it should be printed out /explained. However, it can still be useful to have a 'Notations' section at the beginning of the report.
5. All figures must be referenced in the text. The same applies to all references (usually automatic in Latex/bibtex).
6. When you write 'see Figure 4', for example, you do not want a line break between 'Figure' and '4'. To avoid this, use '~' instead of space between Figure and 4.
7. **Avoid making forward references to equations** later on, i.e. write out the equation the first time it is used and then refer backwards, if needed. Don't forget the brackets around the equation number. Be sure to indicate what each new parameter and variable means.
8. **Equations** are best introduced as part of the text. Therefore, for example, only use a colon (:) when writing '....as follows:' or '... according to the following equations:'. It is therefore normal to write, for example, 'The torque balance for the flywheel is', new line, equation + comma, new line, 'where T is the torque, J is the inertia'
If the equation is the end of a sentence, you put a full stop.
9. Avoid referring to your own report, e.g. 'In this thesis we'.
10. If possible, **avoid citing websites**. Reference to a book or article is both more credible and more consistent.
11. The **reference** in the text should usually be at the end of the sentence (before the full stop) with a space before it.
12. Make sure that **font size in figures** is sufficient. People over 40 often find it difficult to read if the font size is below 10. The default should be the same font size as the main text.

Matlab's default font size is usually far too small. To increase the font size in Matlab one may use the command:

```
set(0, 'defaulttextfontsize', 22)
set(0, 'defaultaxesfontsize', 22)
```

where 22 is the font size. Running these commands will not take effect until you have killed the plot window and made a new plot.

If you want to increase the linewidth and marker size to better suite the figure size in your report you may use the commands

```
set(0, 'defaultlinelinewidth', 1.0)
set(0, 'defaultlinemarkersize', 5)
```

Preferably you should save your figures in eps, ps, pdf or some other format that is vectorized and not based on pixels, like jpg, tiff etc. Then you can zoom without losing the sharpness.

It is generally a good idea to write a script for each plot with the same name as the file such that it becomes easy to modify the figure afterwards (which you most likely will...).

13. **Caption on figures** are normally below the figure, and caption text to **tables** are usually above the table.
14. **Run a spelling check** on the entire thesis (try [deepl.com](https://www.deepl.com), for example, translating both ways).
15. **The purpose of the report is not to show how much work that has been done**, but to be useful for future readers. In other words, you should always focus on the reader when you write your report.
 - Voluminous material that is only of value for those working with the same kind of problems should be placed in the **appendix**.
 - The order the material is presented should be chosen from a **pedagogical** view, which may not be the order the work was conducted in the project.

Abstract

An abstract should contain a brief summary of what the work is all about: a motivation for the presented work, a short description of the methods used and finally the main results, application of the results and the conclusions made.

Preface

A preface is optional and may contain almost any descriptive information related to the work conducted.

Introduction

The introduction is often the hardest part to write. It should

- introduce the reader to the research area, motivate the problem at large, and shortly describe (and cite) relevant work of others.
- describe the problems attacked in your work and how it is related to and different from that of others.
- briefly describe the methods used.
- state the main results and the conclusions made.

Sometimes the introduction ends with the outline of the report.

Notation

Often, it is very helpful to have a chapter where the notation used is listed. Below is an example of such a list. Below is an example.

Abbreviations

BFC	biofilm compartment
BOD	biological oxygen demand
COD	chemical oxygen demand
CST	continuously stirred tank
CSTR	continuously stirred tank reactor

Capital Letters

<i>A</i>	area (m^2), biofilm area (m^2)
<i>D</i>	diffusion coefficient (m^2d^{-1})
<i>G</i>	transfer function, transfer function matrix
<i>J</i>	substrate flux ($\text{gm}^{-2}\text{d}^{-1}$, mole $\text{m}^{-2}\text{d}^{-1}$)

Small Letters

<i>a</i>	specific surface area (m^2m^{-3})
<i>b</i>	endogenous respiration rate coefficient (d^{-1})
<i>c</i>	concentration of dissolved component (gm^{-3} , mole m^{-3})
<i>d</i>	time delay in ammonium meter (d)

Greek Letters

α	transfer function singularity
γ	non-dimensional coefficient for substrate flux into biofilm
δ	non-dimensional biofilm thickness ($1 - \rho$)
ϵ	volume fraction of solid component (m^3m^{-3})

Subscripts

<i>A</i>	activation
<i>D</i>	death
<i>E</i>	endogenous respiration
<i>I</i>	inactivation
<i>L</i>	lysis
<i>a</i>	active
<i>ao</i>	ammonium oxidizers

Diacritical marks

\sim	scaled
\wedge	approximation or estimate
\sim	steady-state or infinite sum

Body text

The next chapter of the body text is traditionally a “Method” chapter, describing how you have done things and the theory that you use, followed by “Results”. However, the report need not follow any fixed rules. My opinion is that whatever disposition that makes the transfer of knowledge the best should be used.

Note that the information given should be such that a reader should ideally be able to reproduce the results given. This goes for experimental results as well as simulations.

Any simulations should always be clear enough to be repeated (reproduced) by a reader of the thesis. That means that inputs and model equations have to be described in the thesis.

Typically plots may have been generated in MATLAB. The easiest way to put them in a Latex file is to use the command

```
>> print -depsc filename
```

in Matlab. This generates a file filename.eps which can be imported to the Latex document by using `\includegraphics`

Discussion

The results should always be discussed and analysed relative to expectations, other people's results, state of the art etc. Sometimes this is best integrated with the results and sometimes it is better to have it as a separate chapter.

The conclusion should describe

- the problem
- briefly the methods used.
- the results
- the conclusions made on basis of the results.

References (or Bibliography)

Make sure all cited literature is in the list. It should be so complete that one should not have any problems

The reference list, which is an unnumbered chapter, should list all sources used in the text. The general rule is that the author of a text is responsible for all statements therein, except where an explicit reference is given. There must never be any doubt about who has obtained a certain result, phrased a certain line of text, or drawn a certain figure.

References are ordered either alphabetically after the first author or in order of appearance in the text. Each reference should comprise, in this order, authors, title, and bibliographic data. Do not omit any author names. The bibliographic data should be given in a consistent format for each reference type (book, journal article, conference article, report, and website), in sufficient detail to allow readers to find the reference. The year should always be given, or the date of access for online sources.

The references are labelled with a number in square brackets [1] or with name and year [Shannon, 1948]. When referring to a book, always give page or section numbers, as in [1, pp. 12–16].

Appendix

One or more appendices may conclude the report. Material that is not crucial for the coherence of the report but may be of interest for some readers can be deferred to an appendix. Appendices are numbered by capital letters (A, B, . . .) and their sections as A.1, A.2, . . . All appendices should be cross referenced: Refer to them from somewhere in the text, and say in the beginning of each appendix which part of the text it belongs to.