PREFACE

I loved tweaking with LaTeX class settings while writing my own PhD thesis. I've asked if others in my research group would like to have my class, and one person said yes. Since I like dabbling with LaTeX I did polish the class, and voilà.

Enjoy!

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Trondheim, 25 September 2018

ACKNOWLEDGEMENTS

I am forever grateful for coffee.

ABSTRACT

This is the abstract of the documentation of the avhandling class.

CONTENTS

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INTRODUCTION

This will eventually be the documentation for the avhandling LaTeX class.

SETTING UP THE CLASS

This chapter describes how to start writing with the class. It also describes which options to tweak and how to tweak them. And here is some meaningless sentences just to make sure the appearance of the chapter abstract and table of contents looks all right. My intention was that the first page of a chapter is just the title with an abstract and table of contents.

Chapter outline

2.1   Installation

To use the avhandling class you need to copy `avhandling.cls` into your LaTeX path[1]. If you want to use the physics package, you should copy `physics.sty`, `logreq.sty`, and `logreq.def` too. I would also copy the contens of the documentation folder where this document and its source files exist, to your thesis folder, as a starting point.

There are various options for editing LaTeX documents. I would recommend using ShareLaTeX/OverLeaf. That is an in-browser option with cloud storage and editing history included! Just upload the avhandling class file (`avhandling.cls`), and you're good to go.

I used the nature biber bibliography style. If you liked the look of it, copy `nature.cbx` and `nature.bbx` to your thesis folder.

2.2   Building your first thesis document

This documentation file is type-set using my standard settings for my PhD thesis. You might find that the chapter heading is simply aweful. Or, maybe you like the heading, but would like a different colour. Perhaps you think having a chapter table of contents is ridiculous. And what's the point in this chapter abstract? Maybe you prefer writing it all in A4 format and scaling down to B5 when printing?

Remember to explain about using notes to self!

In this section, I will walk you through the `main.tex` file and explain the options.

2.2.1   The class options

At the very first line of your `main.tex` document, you declare the document-class as follows:

`\documentclass[<options>]{avhandling}`

The class is built on top of the memoir class, and all options available with memoir is also available to the avhandling wrapper class. Refer to the manual of memoir to get a thorough list of every option.

The page size of the pdf-file is in B5 format with font size 11 pt, as recommended by the printing companies that NTNU use for thesis printing. The margins are set by the memoir option `isopage[12]`, and a binding offset of 1 cm has been included. If you want to change to A4 format and

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[1]A safe bet would be to put it in your thesis folder.

```
./images/bcs.pdf
```

Figure 2.1: Example figure

font size 12 pt, which will then be scaled down to B5, you can do so by passing in the following self-explicatory options:

`\documentclass[a4paper, 12pt]{avhandling}`

Some useful options to the avhandling and memoir classes are described here, with the option marked with an asterisk * being the default setting.

draft, final* In final mode all images are shown, all margin notes are removed, etc. With **draft** the margin notes are displayed and images are not shown, just a box taking up the image's spot, as shown in Figure 2.1. In addition, memoir provides a black box next to an overfull line: Thisisaveryverylongsentencewithoutactualmeaningjusttodisplayoverfullness ∎ You can turn on images in draft mode by using the **showimages** keyword:

`\documentclass[draft, showimages]{avhandling}`

Another perk with **draft** mode, is that the paper is used more economically. That is, it uses the **oneside** memoir option so that the chapters can start on any side they want. If you want to override that by forcing all chapters to start at the right side so that you can print many many empty pages, use the memoir option **twoside** together with **draft**. [2]

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[2] I did that for this document, to show off how the fancy final layout of the thesis will be, but also show the benefits from using draft mode while writing and editing.

2.2.2 Preamble, self-defined commands, and acronyms and symbols

The next chunk of commands in the `main.tex` file, there is a list of input commands:

```
\input{preamble/preamble}
\input{preamble/mycommands}
\input{preamble/acronyms}
\input{preamble/symbols}
```

To tidy things up a bit, loading packages and setting settings are put into a file of their own: `preamble.tex` which I put into the `preamble` folder. The names should be self-explicatory.

The preamble. Let us take a peak into the preamble settings. The first setting is regarding the references. By default, the bibliography backend biber is used together with the biblatex package to handle references, as that is currently the most tweakable option. Other default settings are put in the class file, and they are:

```
\RequirePackage[
    style=nature,      % numbered references
    natbib=true,       % ability to use natbib package macros
    backend=biber,          % defined in class settings
    date=year,
    url=false,       % get rid of urls
    doi=false,       % get rid of dois
    isbn=false,      % get rid of isbns
    sorting=none,  % references chronologically numbered
    maxbibnames=99,
    giveninits=true,          % all first names as initials
    terseinits=true           % no dots after initials
]{biblatex}
```

With the exception of the **style**, **natbib**, and **backend** options which need to be set with the class, the rest can be adjusted in the preamble:

```
\ExecuteBibliographyOptions{key=value}
```

Check the documentation of the biblatex package for more preamble options. The documentation also has examples of the various standard styles, but the internet can provide you with several additional styles. The brave can also create their own.

The **natbib** option allows us to use the natbib package commands, which is handy. That is the \citep option for *parenthesis* enclosed citations, such as [1]. Another commonly used is the \citet macro for citations in *text*, such as Simon *et al.* [1] wrote something super valuable.

2.3 Section without content

2.4 Just adding these to fill out the chapter toc

2.5 Because it looks so tiny otherwise

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CLASS USAGE

How to tweak the look of this very chapter introduction/abstract, and how to turn off the chapter table of contents. Also, a note on the todo-notes is added.

Chapter outline

3.1 Chapter abstract and table of contents

I created the command \intro for the special formatting of the chapter abstract. It is defined in avhandling.cls, and can of course be tweaked to your liking.

In addition, I added a so-called *minitoc* at the end of this chapter abstract. If you'd like to keep the abstract, but get rid of the minitoc, just delete the \chaptertoc in the \intro definition in the avhandling.cls file.

The depth of the table of contents is set to 1, that is, just the section headings are included. Changing **tocdepth** to 2 will include subsections as well.

3.2 Todo-notes

During the writing process, I used todo-notes in the margin to help keep track of comments. The package I use, and which is included in this class, is the **fixme** package. I redefined the commands to be more descriptive of how I would use the notes.

Like so
Figure wanted
Citation needed

There are 3 commands: \todo, \todocite, and \todofig. The \todo command needs text input in curly braces, like so: \todo\{Remember this!}. The other two add by default the text of "citation needed" and "figure wanted". If you want to describe the problem more, just write of your heart's content in square brackets like so: \todocite[A very very important paper by a very very important author should deffo be cited here.].

Citation needed
Perhaps cite the
package manual?

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TIPS AND TRICKS

CONCLUSION

Good luck with your thesis writing!

If you have any questions regarding the use of the avhandling class, please contact the author Hilde Aas Nøst at hilde.nost@gmail.com.

REFERENCES

1. Simon, BR, Wu, JSS, Zienkiewicz, OC & Paul, DK. Evaluation of u-w and u - π finite element methods for the dynamic response of saturated porous media using one-dimensional models. *International Journal for Numerical and Analytical Methods in Geomechanics* **10,** 461–482 (1986).