UNIVERSITY OF ABERDEEN

THESIS TITLE

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REQUIREMENT FOR THE MENG. DEGREE IN ENGINEERING.

School of Engineering 2012 Univ. of Aberdeen

ABSTRACT

This is a short summary of my work...

CONTENTS

Final word count: 970

LIST OF FIGURES

LIST OF TABLES

NOMENCLATURE

Acronyms/Terminology

MD Molecular Dynamics, 15

Variables/Constants

α Alpha, 15

ACKNOWLEDGEMENTS

I would like to dedicate this work to..

CHAPTER

ONE

INTRODUCTION

Welcome to a latex thesis style for engineering students working on their honours project. I'll illustrate how to perform certain cool features of this thesis in the following text.

First thing to note. In order for things such as the table of contents, references, word count and nomenclature to work, you need to use my makethesis.sh script to make the thesis. When you run this script, it will make a file called main.pdf. This is your thesis! Sometimes you might need to run the script twice to get correct page numbers on things like the table of contents.

The second thing to note is that to start a new paragraph, I just leave at least one blank line in the text!

1.1 Numbering of Sections, Tables, and Equations

The first major benefit of Latex is that everything is numbered automatically. You don't have to generate a table of contents, figures, references or even a nomenclature! This is all handled automatically.

1.2 Mathematical Expressions

An excellent feature of latex is its support for math. For example, we can create an equation like so

$$y = mx + c \tag{1.2.1}$$

Notice how the equation is nicely formatted and numbered? We can even automatically refer to the equation number. First, when we make the equation

we have to give it a label like so

$$a = \int c(x)dx \tag{1.2.2}$$

Then, in the text we can refer to it just by typing Eq. 1.2.2! We can put labels anywhere, in figures, tables, chapters wherever, and use the ref command to refer to them. For instance, this section is Sec. 1.2. Notice the label just after the section command above?

We can also write math inline. So for example I might say, our first function is $y = mx + c$. This is the same function as above, but printed in-line.

There are a million math commands, so please take a look at the AMS math package manual for more information. Here is an impressive equation to show off the features

$$\left(\frac{\partial}{\partial t} + \sum_{j}^{n}\left[i\mathcal{L}_j^0 - \sum_{k>j}^{n}\mathcal{T}(j,k)\right]\right) f(\Gamma_1,\ldots,\Gamma_n,t)$$
$$= \sum_{j=1}^{n}\int \mathrm{d}\Gamma_{n+1}\,\mathcal{T}(j,n+1)\,f(\Gamma_1,\ldots,\Gamma_{n+1},t) \tag{1.2.3}$$

1.3 Adding Figures

To add figures to your text, you need to use a series of commands, but you can just copy paste the one below and tweak it for your needs.

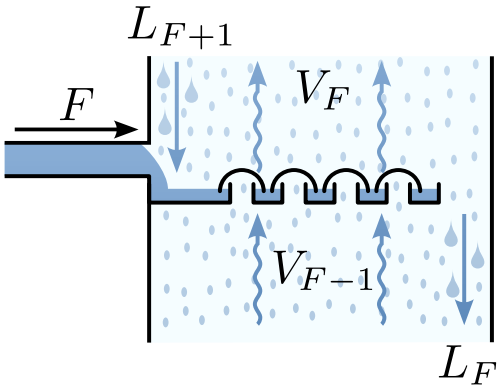

Figure 1.1: A test figure.

I can refer to this figure (Fig. 1.1) using the ref command again, provided I've placed a label in the caption. But notice how I don't get to choose where it is placed? I can only give hints, via the [htp] option (which means either place it [H]ere, at the [T]op of the page, or a whole [P]age). Latex is free to place it where it thinks best.

The one time we can be forceful about a figure is when it is placed on its own page using just the [p] placement. But if we're doing a full-page figure we might want it rotated too to make sure we fully use the space. See Fig. 1.2 for what I mean.

1.4 Formatting Text

You can format text in latex, but **please use it sparingly!**. The results *aren't always pleasant*. Use it only when you really want to.

1.5 Using a Nomenclature

To use a nomenclature you must add extra commands throughout your text whenever you define a new term. For example, a handy acronym is MD .

The nomenclature command has 3 arguments. The last argument is the description of the symbol/acronym. The second argument is the symbol/acronym. The first is the type of entry it is (A=acronyms, O=operator, V=Variables/Constants, S=Notation, and F is functions), followed by a space then the alphabetical version of the term. For example, if I wanted to define a greek symbol such as α , I would need to write alpha here.

1.6 Tables

Tables are made in the following way...

Just after the begin tabular command, the number of columns and their alignments are selected. p means the column is a fixed width paragraph, l c and r are a left aligned, centered and right aligned columns respectively. The pipe character | adds vertical lines between columns. Horizontal lines are added using hline commands in the table itself.

We can also make full-page sideways tables when there is a lot of data to present (See Table. 1.2)

1.7 Footnotes

Footnotes are really easy to do[1].

[1] And you can even put mathematics (even figures and tables) in them

$$f = m\,x + c \tag{1.7.1}$$

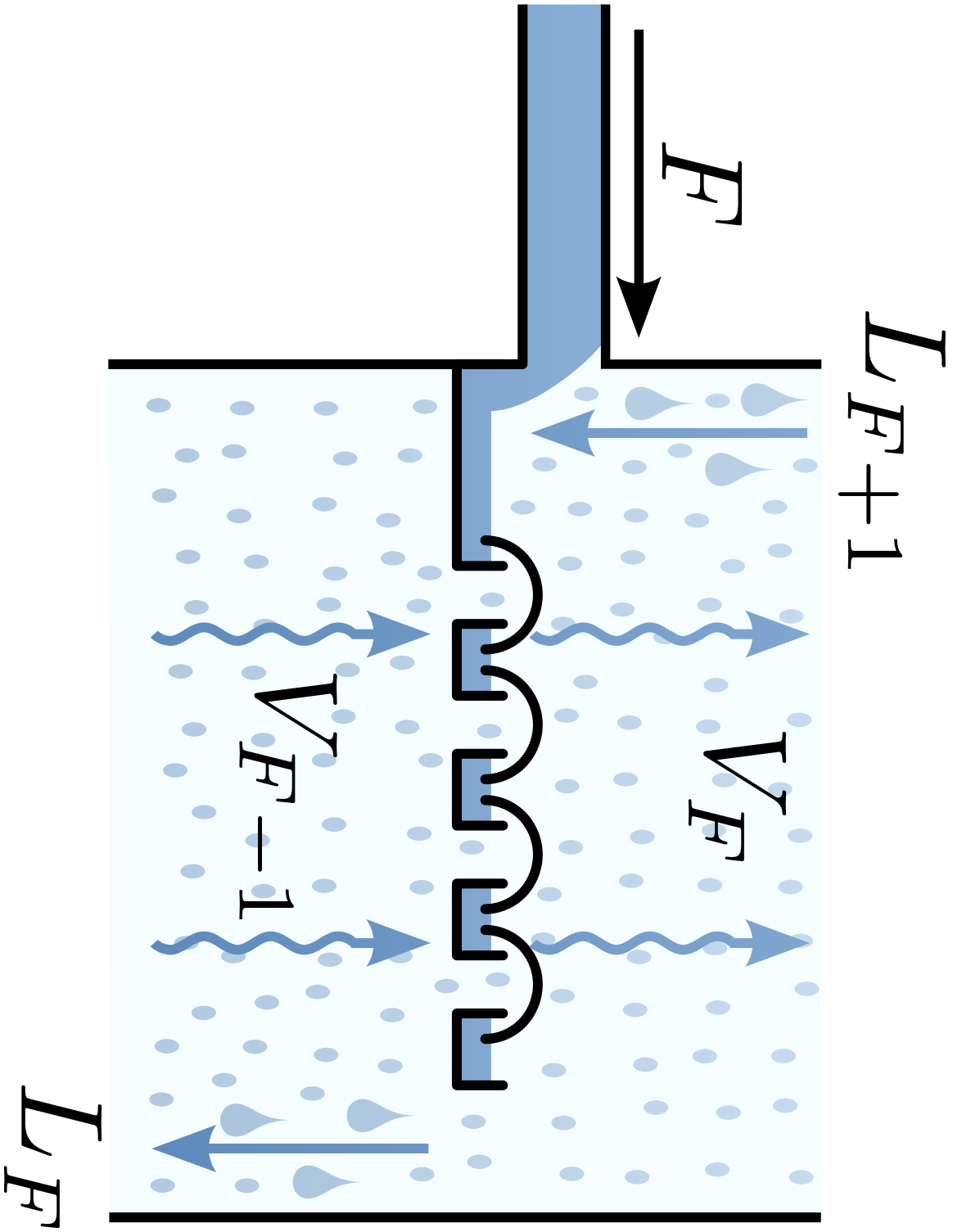

Figure 1.2: A full page test figure and even the caption is rotated!.

Surface	ε	Surface	ε
Asbestos, Board	0.96	Carbon, Candle soot	0.95
Water	0.95–0.96	Carbon, Lampblack	0.95
Iron and steel, rough	0.94–0.97	Brick, Red, rough	0.93
White enamel paint	0.906	Iron and steel	0.74
Iron and steel, Sheet steel, oxidised	0.657	Oxidised Lead	0.28
Iron and steel, Polished iron	0.14–0.38	Rough Aluminium	0.06
Polished Aluminium	0.04	Highly polished Gold	0.02–0.35

Table 1.1: Typical values of the emissivity for various materials, taken from Coulson & Richardson, Vol. 1, Fig. 9.40.

1.8 Referencing and Generating

You can reference entries in your bib file using the key you have set for it like so [1]. I can even do cool things like say the author of that citation is Bannerman and it was published in 2009. Or even ask for a full citation, like so: M. N. Bannerman. “Discrete potentials are good”. In: *J. M. B.* 1 (2009), pp. 1–100.

Just don’t go crazy and write paragraphs and paragraphs of text in them.

Surface	ε	Surface	ε
Asbestos, Board	0.96	Carbon, Candle soot	0.95
Water	0.95–0.96	Carbon, Lampblack	0.95
Iron and steel, rough	0.94–0.97	Brick, Red, rough	0.93
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Table 1.2: Typical values of the emissivity for various materials, taken from Coulson & Richardson, Vol. 1, Fig. 9.40.

CHAPTER
TWO

A LITTLE FURTHER DOWN THE RABBIT HOLE

WHY stop there? There are some lovely features of latex we can use, like the lettrine at the start of this chapter. Or the epigraph at the start of the next section!

2.1 Epigraphs

"Epigraphs are cool!"
M. Campbell Bannerman
Y

ou can use epigraphs to include relevant information, such as quotes or information on where the section/chapter was published.

2.2 Hyperlinks

Finally, we can even take advantage of the digital nature of our document and include hyperlinks. This entire sentence (try clicking it) is linked to my own thesis, available on the web and an example of what you can achieve with this latex style!

CHAPTER

THREE

REFERENCES

[1] M. N. Bannerman. “Discrete potentials are good”. In: *J. M. B.* 1 (2009), pp. 1–100.