A Chalmers University of Technology Degree project report template for LaTeX

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Cover: Wind visualization constructed in Matlab showing a surface of constant wind speed along with streamlines of the flow.

Typeset in LaTeX
Gothenburg, Sweden 2025

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Abstract

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Acknowledgements

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List of Acronyms

Below is the list of acronyms that have been used throughout this thesis listed in alphabetical order:

BES	Battery Energy Storage
DER	Distributed Energy Resource
MILP	Mixed-Integer Linear Programming
MG	Microgrid
PV	Photovoltaic
RES	Renewable-based Energy Sources

Nomenclature

Below is the nomenclature of indices, sets, parameters, and variables that have been used throughout this thesis.

Indices

i,j	Indices for distribution network buses
t	Index for time step

Sets

$\mathcal{D}$	Set of distribution network buses
$\mathcal{D}_s$	Set of substation buses
$\mathcal{H}$	Set of time steps (simulation/scheduling horizon)
$\mathcal{N}$	Set of buses

Parameters

γ	Penalty coefficient
Δt	Time discretization step (time interval)
η_j^{ch}	Charging efficiency of BES
η_j^{dis}	Discharging efficiency of BES
$\boldsymbol{H}$	Adjacency matrix
N	Number of iterations
$P_{j,t}^{L}$	Active power of load demand
$P_{j,t}^{PV}$	Active power from solar generation

Variables

p_j	Active power injection at bus j
p_{ji}	Active power flow from bus j to bus i
v_i	Square of voltage magnitude at bus i

Contents

Contents

List of Figures

List of Tables

1

Introduction

1.1   Background

1.2   Purpose

1.3   Goals

1.4   Limitations / Demarcations

This chapter presents the section levels that can be used in the template.

1.5   Section levels

The following table presents an overview of the section levels that are used in this document. The number of levels that are numbered and included in the table of contents is set in the settings file `Settings.tex`. The levels are shown in Section 1.6.

Name	Command
Chapter	\chapter{*Chapter name*}
Section	\section{*Section name*}
Subsection	\subsection{*Subsection name*}
Subsubsection	\subsubsection{*Subsubsection name*}
Paragraph	\paragraph{*Paragraph name*}
Subparagraph	\subparagraph{*Subparagraph name*}

1.6   Section

1.6.1   Subsection

1.6.1.1   Subsubsection

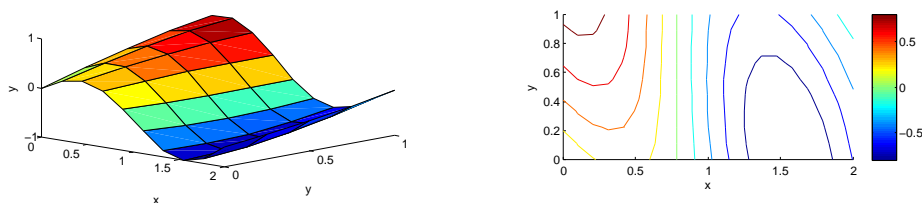##### 1.6.1.1.1   Paragraph

1.6.1.1.1.1   Subparagraph

2
Theory

In the following sections, examples of a figure, an equation, a table, a chemical structure, a list, a listing and a to-do note are shown.

2.1 Figure

Figure 2.1: Surface and contour plots showing the two dimensional function $z(x, y) = \sin(x + y)\cos(2x)$.

2.2 Equation

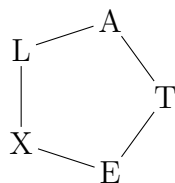$$f(t) = \begin{cases} 1, & t < 1 \\ t^2 & t \geq 1 \end{cases} \tag{2.1}$$

2.3 Table

Table 2.1: Values of $f(t)$ for $t = 0, 1, \ldots 5$.

t	0	1	2	3	4	5
$f(t)$	1	1	4	9	16	25

2.4   Chemical structure

$$\begin{array}{c} \text{A} \\ \text{L} \quad\quad \text{T} \\ \text{X} \quad \text{E} \end{array}$$

2.5   List

1. The first item
   (a) Nested item 1
   (b) Nested item 2
2. The second item
3. The third item
4. ...

2.6   Source code listing

```
% Generate x- and y-nodes
x=linspace(0,1); y=linspace(0,1);

% Calculate z=f(x,y)
for i=1:length(x)
  for j=1:length(y)
    z(i,j)=x(i)+2*y(j);
  end
end
```

2.7   To-do note

The `todo` package enables to-do notes to be added in the page margin. This can be a very convenient way of making notes in the document during the process of writing. All notes can be hidden by using the option *disable* when loading the package in the settings.

Example of a to-do note.

3
Methods

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4
Results

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5
Conclusion

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Bibliography

[1] Gustaver, M. (2020) A Chalmers University of Technology Master's thesis template for LATEX. Unpublished.

A
Appendix 1

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