POLITECNICO
MILANO 1863

SCUOLA DI INGEGNERIA INDUSTRIALE
E DELL'INFORMAZIONE

`elegant-polimi-thesis` manual

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Nomenclature

POLIMI Politecnico di Milano

CDL Corso di Laurea

CCS Consigli di Corsi di Studio

CFU Crediti Formativi Universitari

1 | Chapter one

In this section there will be useful information about how to style chapters, sections and so on. Be sure to read the Typst guide for LaTeX users [1].

1.1 Sections and subsection

In LaTeX, the canonical sections division is as follows:

```
\chapter{}
\section{}
\subsection{}
\subsubsection{}
```

in Typst, there are just headings [2] (similar to Markdown) – so the LaTeX system maps to:

```
= Chapter           // Heading level 1
== Section          // Heading level 2
=== Subsection      // Heading level 3
==== Subsubsection  // Heading level 4
```

If you need to turn off the numbering you will call the `heading` function:

```
#heading("Heading title", level: n, numbering: none)
```

1.2 Equations

In LaTeX, there are many environments (`equation`, `equation*`, `aligned`) – in Typst there is just the equation environment called with dollars [3]:

- Inline math, same as LaTeX:

  ```
  $a^2 + b^2 = c^2$
  ```

  $a^2 + b^2 = c^2$

- Block math, by adding whitespaces before and after the content:

```
$ a^2 + b^2 = c^2 $
```

$$a^2 + b^2 = c^2$$

For a more complex equation the LaTeX code is:

```
\begin{subequations}
  \begin{align}
    \nabla\cdot \bm{D} & = \rho, \\
    \nabla \times \bm{E} + \frac{\partial \bm{B}}{\partial t} & = \bm{0}, \\
    \nabla\cdot \bm{B} & = 0, \\
    \nabla \times \bm{H} - \frac{\partial \bm{D}}{\partial t} &= \bm{J}.
  \end{align}
\end{subequations}
```

while the **Typst** version:

```
$
  lr(
    \{
    #block[$
                                                Delta dot bold(D) & = rho\, \
    Delta times bold(E) + display((partial bold(B))/(partial t)) & = 0\, \
                                                Delta dot bold(B) & = 0\, \
    Delta times bold(H) - display((partial bold(D))/(partial t)) & = bold(J).
    $]
  )
$
```

Which evaluates to:

$$\begin{cases} \Delta \cdot \boldsymbol{D} = \rho, \\ \Delta \times \boldsymbol{E} + \dfrac{\partial \boldsymbol{B}}{\partial t} = 0, \\ \Delta \cdot \boldsymbol{B} = 0, \\ \Delta \times \boldsymbol{H} - \dfrac{\partial \boldsymbol{D}}{\partial t} = \boldsymbol{J}. \end{cases}$$

This is quite an *advanced way* to get things done. To put it simply, this is the **Typst** equivalent of LaTeX's `\left{ equation \right.` — though if you don't understand how/why it works, that's ok – I'll break it down, but first have a read at the `lr()` function documentation [4].

- The equations must be aligned to the center and I achieve that with `&`, the same as LaTeX
- Then, the left part must have a `{` to wrap around it: in order to do so, **Typst** needs to have an element to compute the size for, which will be the `block[]` part

- In the block, I'll insert all the equations by linebreaking with `\` (in LaTeX this is done via `\\`, a double backslash)
- Finally, I'll wrap both the parenthesis AND the block in the same `lr()` call, effectively sizing everything

I highly encourage you to mess with the above code to see how it changes. It will dramatically help you to understand how Typst works.

The "normal" representation would have been just to use the `cases()` function:

```
$
  cases(
    Delta dot bold(D) & = rho\,,
    Delta times bold(E) + display((partial bold(B))/(partial t)) & = 0\,,
    Delta dot bold(B) & = 0\,,
    Delta times bold(H) - display((partial bold(D))/(partial t)) & = bold(J).
  )
$
```

$$\begin{cases} \Delta \cdot \boldsymbol{D} & = \rho, \\ \Delta \times \boldsymbol{E} + \dfrac{\partial \boldsymbol{B}}{\partial t} & = 0, \\ \Delta \cdot \boldsymbol{B} & = 0, \\ \Delta \times \boldsymbol{H} - \dfrac{\partial \boldsymbol{D}}{\partial t} & = \boldsymbol{J}. \end{cases}$$

By default, the equations are **not** numbered – however if you need to:

$$\begin{cases} \Delta \cdot \boldsymbol{D} = \rho, \\ \Delta \times \boldsymbol{E} + \dfrac{\partial \boldsymbol{B}}{\partial t} = 0, \\ \Delta \cdot \boldsymbol{B} = 0, \\ \Delta \times \boldsymbol{H} - \dfrac{\partial \boldsymbol{D}}{\partial t} = \boldsymbol{J}. \end{cases} \tag{1}$$

And to reference it just type Equation 1.

1.3 Figures, Tables and Algorithms

1.3.1 Figures

Via the `figure` environment [5], as you would do in LaTeX:

Figure 1.1: Caption in the List of Figures.

However, since Typst does not *natively* support subfigures (see related issue), the packages smartaref [6] and hallon [7] have been integrated:

(a) Left Polimi logo.

(b) Right Polimi logo.

Figure 1.2: A figure composed of two sub figures, similar to `\subfloat{}`.

You can reference either the main Figure 1.2; or a single subfigure: Figure 1.2a, or Figure 1.2b.

1.3.2 Tables

	Column 1	Column 2	Column 3
row 1	1	2	3
row 2	α	β	γ
row 3	alpha	beta	gamma

Table 1.1: Caption of the Table to appear in the List of Tables.

As you can see, it could be useful to implement a default style for every table [8].

1.3.3 Algorithms

For algorithms, there are a lot of packages on Typst universe [9]. The following are my recommendations.

- `lovelace` [10]

Algorithm 1.1: My cool algorithm

```
Initial instructions
for for − condition do
  | Some instructions
```

Algorithm 1.1: My cool algorithm

```
4  | if if − condition then
5  | Some other instructions
6  | end if
7  end for
8  while while − condition do
9  | Some further instructions
10 end while
11 Final instructions
```

See Algorithm 1.1.

- `algo` [11]

Name of Algorithm

```
1  Initial instructions
2  for for − condition do
3      Some instructions
4      if if − condition then
5          Some other instructions
6      end if
7  end for
8  while while − condition do
9      Some further instructions
10 end while
11 Final instructions
```

1.4 Theorems, propositions and lists

Theorem 1.1. *Write here your theorem.*

Proposition 1.1. *Write here your proposition.*

Proof. If useful you can report here the proof. □

Powered by [12].

Normal list:

- First item
- Second item

Numbered list:

1. First item
2. Second item

1.5 Plagiarism

You have to be sure to respect the rules on Copyright and avoid an involuntary plagiarism. It is allowed to take other persons' ideas only if the author and his original work are clearly mentioned. As stated in the Code of Ethics and Conduct, Politecnico di Milano promotes the integrity of research, condemns manipulation and the infringement of intellectual property, and gives opportunity to all those who carry out research activities to have an adequate training on ethical conduct and integrity while doing research. To be sure to respect the copyright rules, read the guides on Copyright legislation and citation styles available at:

https://www.biblio.polimi.it/en/tools/courses-and-tutorials

You can also attend the courses which are periodically organized on "Bibliographic citations and bibliography management".

1.6 Bibliography and citations

Your thesis must contain a suitable Bibliography which lists all the sources consulted on developing the work. The list of references is placed at the end of the manuscript after the chapter containing the conclusions. We suggest to use the BibTeX package [13] and save the bibliographic references in the file `Thesis_bibliography.bib`. This is indeed a database containing all the information about the references.

To cite in your manuscript, use the `cite` [14] command as follows:

Here is how you cite bibliography entries: [15] or chained [16], [17].

As it would have been in LaTeX, the bibliography [18] is automatically generated.

2 | Second chapter

Future development.

A | Appendix A

This is the Appendix section.

Acknowledgements

This is the Acknowledgements section.

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