# LaTeX-workshop (Manual)

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## Contents

# 1 Introduction

This is the manual belonging to the LaTeXcourse of AEskwadraat. Start with looking through the manual, including the source code. There you will find most of the answers on the exercises and it gives you a look at how LaTeX-code looks like. Then start with the exercises. It is the idea that you use the source code of this file and perhaps also the internet. Probably you will make some small mistakes which will lead to errors when generating your pdf-file. This will happen many times when you are working with LaTeX, so here you will learn how to handle this kind of problems. Then, last but not least, just like with a lot of things, there is not just one way to make a layout, but many more. After some time you will know what you like best.

# 2 LaTeX

All information from this paragraph is taken from a manual[1].
"TeX is a computer program created by Donald E. Knuth. It is aimed at typesetting text and mathematical formulae."
"LaTeX enables authors to typset and print their work at the higherst typographical quality, using a predefined, professional layout."

## 2.1 Advantages

- Professional layouts are available, which makes your document look like "printed"
- The making of mathematical formulas is easy.
- Users only have to understand a couple of basic commands, which specify the structure of the document.
- Even complex structures like footnotes, references, table of contents and bibliographies are easily generated.
- LaTeX encourages authors to write well structured documents, because that is how LaTeX works... by defining structures.
- LaTeX is free.

## 2.2 Disadvantages

- Although some parameters can be adjusted in a well defined layout, the creation of a new layout is hard and takes a lot of time.
- It is not WYSIWYG (what you see is what you get), like e.g. Word.

[1] A not so short introduction to LaTeX, `http://http://tobi.oetiker.ch/lshort/lshort.pdf`

# 3 Installation of LaTeX

LaTeX s already installed at the computers in the AEskwadraat room and the computers of Utrecht University. If you want to use LaTeX at home, you will need two computer programs:

**A texteditor** in principle this can be any texteditor, but it is the easiest to use a LaTeX editor like TeXstudio or TeXmaker. For this course we advise you to install TeXstudio.

**A compiler** to compile your LaTeXcode to a pdf-format. For Windows you can use MikTeX, for Linux TeXlive and for Apple MacTeX. These programs also make sure that your packages will be downloaded automatically.

# 4 New document

How do you make a new document.

1. Open *TeXstudio* and start an empty document.
2. Place `\documentclass{article}` at the first line. This command indicates what kind of text you want to write, in this case an article. It implicitly defines the lettertype.
3. Place the packages you want to use. These enable you to add some functionality to LaTeX which are not there otherwise. A couple of most used packages are:
    1. *amsmath*, expansion for some mathematical formulas.
    2. *babel*, defines the language of your document and makes sure that words will be broken correctly and that 'Chapter' instead of 'Hoofdstuk' is used.
    3. *amssymb*, enables you to use symbols like $\mathbb{R}$.
    4. *graphicx*, for figures.
    5. *parskip*, creates a nicer layout for paragraphs. In the advanced course there will be more information about how to use these packages.
4. As a last step you will place `\begin{document}` and `\end{document}` Between these two commands you will place everything you want to display in your document.
5. Save the file (if you forget this, you will receive an error at the next step).
6. Compile the document using 'pdflatex'.
7. ress 'view pdf' to view the output of your file.

# 5 Title and headings

LaTeX has a structure to show titles and headings.

### 5.1 Titel

To specify the title, author and date, LaTeX has the following commands: `\title{}` , `\author{}` and `\date{}` etween the bracets you place the title, author(s) and the date. If you do not specify the date, LaTeX will use the date you typset the document. You can also hardcode this yourself by placing the command `\today` between the bracets. LaTeX ill only show this information if you type `\maketitle`

If you want to make an index, you can type `\tableofcontents` where you want to place it.

### 5.2 Headings

Headings mark the beginning of your chapter or section. The most common ones are:

- `\section{}`
- `\subsection{}`
- `\subsubsection{}`
- `\paragraph{}`
- `\subparagraph{}`

### 5.3 Paragraphs

In LaTeX o create a paragraph just leave one or two whitespaces. LATEX will make a page layout. Ofcourse there are moments when you do not agree with the layout made by the program. In that case you can make use of:

\\ enforces a linebreak.

**newpage** enforces a new page.

**clearpage** enforces a new page, but places all the figures and tables first.

This is not how your are intended to work with LaTeX so please minimise the use of the above commands.

## 6 Tekst

Just like Microsoft Word, you can present text in LaTeX in different forms and styles. You can tekst **bold**, *italic* or in a nice color. You can choose to make text tiny, small, normal, large, larger or largest. But there is more, you can also make your text huge or gigantic. DON'T FORGET TO USE `\normalsize`, otherwise you will keep writing large. You can also change the font. [2]

[2] You can create a footnote by using the command **footnote.**

# 7 Signs and symbols

For all accents, symbols and othe strange signs, LaTeX uses (often) easy commands. Most of them can be found at: `http://en.wikibooks.org/wiki/LaTeX/Special_Characters`. All symbols and signs can be found by Googling on the terms; 'Latex' + Symbol/Sign.

# 8 Listings

As you could see on the previous pages, you can make different kind of listings in LaTeX. The most commonly used are (`\itemize`), (`\ennumerate`) and (`\description`)

# 9 Errors

LaTeX is a neat program, which will give an error message if something is just not (totally) correct. The most common mistake you will make this week is probably to forget an { or }. LaTeX often indicates a rownumber. The mistake itself is then within a couple of lines of the indicated row.

Another important thing to note is that LaTeXreads the document from front to end. Some commands need something which is indicated later in the text and that is why they will not appear in your pdf file the first time you compile your document. You solve this problem by generating the pdf file more than once.

# 10 Try out for yourself

Of course we cannot learn you everything LaTeX has to offer in this course. That is why it is important to look things up. You can find a lot in the helpmenu of your editor, and *everything* (if you look carefully) on the internet.