

Introduction to writing in LaTeX

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2019 January

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Introduction

1. What is (La)Tex and why use it?
2. Goal of the workshop
3. Very short first steps to get set up
4. Using citation manager and LaTeX together
5. CEU LaTeX template
6. some other things that might be useful

What is LaTeX?

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Goal of the workshop:

- to give enough intro that you can start writing your papers in LaTeX

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- Steep learning curve
- Initially you get work done slower
- Can be hard to step out of the WYSIWYG comfort zone
- Formatting tables is truly painful

Of course there's research on this

"We show that LaTeX users were **slower** than Word users, **wrote less** text in the same amount of time, and produced more typesetting, orthographical, grammatical, and formatting errors.

On most measures, **expert LaTeX users performed even worse than novice Word users**. LaTeX users, however, more often report **enjoying** using their respective software."

Knauff, M., Nejasmic, J. (2014). An Efficiency Comparison of Document Preparation Systems Used in Academic Research and Development. *PloS one*, 9(12)

LaTeX won't make you more productive or your paper any better. Absolutely no one will be impressed by your text editor or language of choice. Writing in LaTeX is purely a personal, subjective choice.

The tools needed

Survival essentials

Absolutely essential survival tricks:

- **ALWAYS** have at least two (2) **backups** of your work (one physical copy, one cloud backup). **This is the bare minimum.**
- Optimal:
 - dedicated backup SSD
 - working copy on your computer
 - the working copy syncs to the cloud.
- **ALWAYS use a bibliography manager!** At this point there are no excuses not to use one of these: Zotero, Mandaley, Endnote.

Getting started

What you need installed on Windows:

- MiKTeX (<https://miktex.org/about>)
- OR
- Tex Live (<https://tug.org/texlive/>)

On Mac OS X:

- Mac TeX (<http://tug.org/mactex>)

Online option: <https://www.overleaf.com> account where you can do all of this online like a google doc.

I would recommend Overleaf for starters because it makes things easier.

Getting started

Actual writing is done in a text editor of your choice. Dedicated TeX editors are (non exhaustive list):

- TeXmaker
- TeXstudio
- TeXworks

Or use a general purpose text editor with a LaTeX add-on:

- Visual Studio Code
- Sublime Text
- Atom
- emacs

Useful resources

- CEU dissertation template:
<http://www.personal.ceu.hu/tex/thesis/>
- <https://www.overleaf.com/learn/> - tutorial everything that you'll need (most likely)
- Google (seriously) and
<https://tex.stackexchange.com/>
- **SUPER USEFUL!** - Templates for CVs, papers, cover letters, etc: <https://www.overleaf.com/latex/templates>

And now we write

Example document

```
1  % everything in this line is a comment and won't be in the final document
2  % the packages and other formatting commands before the \begin{document} is
3  % called the PREAMBULUM
4
5  \documentclass[11pt]{article} % setting the document class to 'article' with 11pt characters
6  \usepackage[utf8]{inputenc}  % using the 'inputenc' package
7
8  \title{perg\_workshop}        % setting the title of the document
9  \author{Akos m}               % Setting the author
10 \date{January 2018}           % and adding the date
11
12
13 % the actual document starts here, between the \begin{document} and \end{document}
14 \begin{document}
15
16 \maketitle                    % adds the title, author and date specified in the preamble
17
18 \section{Introduction}        % starts the first section titled introduction.
19
20 Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod
21 tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam,
22 quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo
23 consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse
24 cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non
25 proident, sunt in culpa qui officia deserunt mollit anim id est laborum.
26
27 \end{document}
```

Basic formatting - input

```
1 This text is \textit{italicized, while} this one is \textbf{bold.}
2 You can \underline{underline text as well}, or combine \textbf{\textit{bold and italics.}}
3 % the syntax for formatting is \textbf{text}.
4 % To combine them, you can do a nested formatting, like \textbf{\textit{text}}
5
6 \medskip % adds horizontal space. other such commands are:
7 % \smallskip
8 % \bigskip
9
10 \begin{enumerate}
11   \item Numbered lists
12   \item Are cool
13     \begin{itemize}
14       \item and you can do nested
15       \item unordered lists too.
16     \end{itemize}
17 \end{enumerate}
```


Basic formatting - output

This text is *italicized*, while this one is **bold**. You can underline text as well, or combine ***bold and italics***.

1. Numbered lists
2. Are cool
 - and you can do nested
 - unordered lists too.

Paragraph formatting - input

```
1  \begin{center} % everything inside this environment is centered
2  Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod
3  tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam,
4  quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo
5  consequat.
6  \end{center}
7
8      % indented paragraph
9  \par Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod
10 tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam,
11 quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo
12 consequat. \\ % adds a linebreak
13
14 \noindent % new paragraph without indenting
15 Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt
16 mollit anim id est laborum.
17 Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod
18 tempor incididunt ut labore et dolore magna aliqua.
```

Paragraph formatting and adding figures - output

Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.

Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.

Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum. Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua.

adding figures and tables - input

```
1  % the [h!] parameter tells the figure environment that you want this fig. _here_
2  \begin{figure}[h!]
3  \includegraphics[scale=0.5]{figures/ceu_picture.jpg} % the [scale=0.5] parameter will
   ↪  scale the image
4  \caption{A picture of CEU}
5  \label{fig:ceu}
6  \end{figure}
7
8
9  % tables are non intuitive. Proof:
10
11
12  \begin{table}[]
13      \centering
14      \begin{tabular}{|c|c|c|}
15          \hline
16          cell1 & cell2 & cell3 \\
17          \hline
18          cell4 & cell5 & cell6 \\
19          cell7 & cell8 & cell9 \\
20          \hline
21      \end{tabular}
22      \caption{My dummy table}
23      \label{tab:my_label}
24  \end{table}
```

Adding figures and tables - output

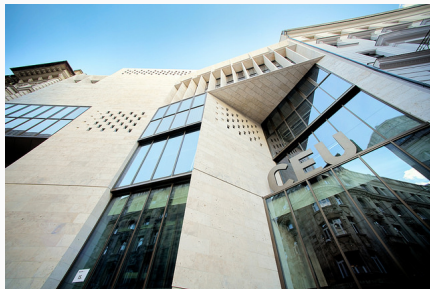


Figure 1: A picture of CEU

cell1	cell2	cell3
cell4	cell5	cell6
cell7	cell8	cell9

Table 1: My dummy table

Many, many tools to get nicely formatted LaTeX tables

- https://en.wikibooks.org/wiki/LaTeX/Tables#Using_spreadsheets_and_data_analysis_tools

- [calc2latex](#): for OpenOffice.org Calc spreadsheets,
- [excel2latex](#): for Microsoft Office Excel,
- [matrix2latex](#): for Python and MATLAB,
- [pandas](#): pandas DataFrame's have a method to convert data they contain to latex,
- [latex-tools](#): a Ruby library,
- [xtable](#): a library for R,
- [org-mode](#): for Emacs users, org-mode tables can be used inline in LaTeX documents, see [\[1\]](#) for a tutorial.
- [Emacs align commands](#): the align commands can clean up a messy LaTeX table.
- [Online Table generator for L^AT_EX](#): An online tool for creating simple tables within the browser. LaTeX format is directly generated
- [Create LaTeX tables online](#): Online tool.

For everything else

There are StackOverflow and Overleaf tutorials and Google.

Adding references with natbib

1. Have `usepackage[round]natbib` in your preamble.
2. You can choose the type of citation you prefer in the [param] space
3. you add the bibliography to your document with a `bibliography{your_bibfile}`

How it looks like with Zotero

1. Right click on your collection folder on the left panel
2. 'Export collection'
3. Format as BibTeX
4. Save it into the same folder as your main .tex

How to cite with natbib

- You can put the source in parenthesis like (Einstein 1999) with `citep{bib_key}`
- Just the date, like: Einstein (1999) with `citet{bib_key}`

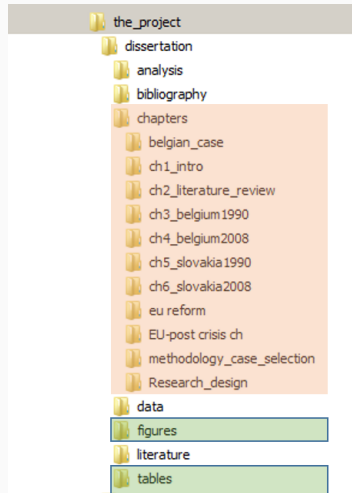
More, in-depth natbib tutorials:

- `http://merkel.texture.rocks/Latex/natbib.php`
- `https://www.overleaf.com/learn/latex/Bibliography_management_with_natbib`

Dissertation workflow and the CEU template

setting up your dissertation in LaTeX

- A main .tex file that contains the link to the chapters, preambulum, title page, acknowledgement, etc.
- Each chapter is a separate .tex file
- The .bib file with your references
- Whatever figures and tables you want to include



Some of the advice is outdated in the CEU template if you use Overleaf or TeXstudio or other contemporary editor: e.g.: don't worry about the order to run pdflatex and bibtex to get your final document, the software does it for you.

The workflow with the CEU template

- Have all your packages and extra formatting options in the preamble in your main .tex

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- Finish your dissertation and graduate

Using LaTeX for CVs, or presentations

- You can find plenty of great LaTeX CV templates on Overleaf which you can modify after.
- The "beamer" class creates the presentation format (such as this one)
- If you want to draw great looking flowcharts or other graphics, you can use the `tikz` package
- All of the previous disclaimer applies to these as well: only do it if you enjoy it, or absolutely must.