

GSNS workshop: \LaTeX beginners

\TeX niCie

Presenters: Thomas & Vincent

7 February 2023

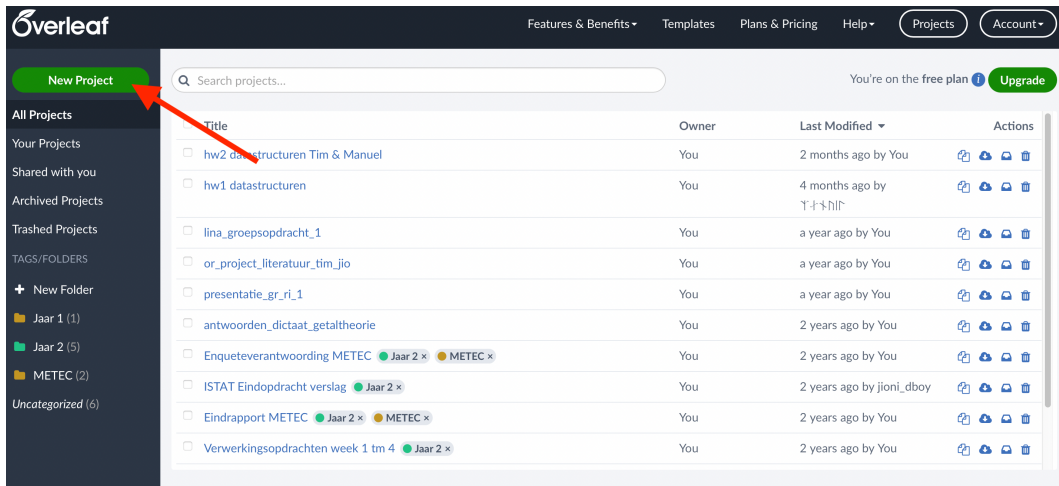
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Schedule

- Text document
- \langle Exercises \rangle
- Formulas
- Figures
- \langle Exercises \rangle
- Tables
- Finishing notes

Overleaf



The screenshot shows the Overleaf web interface. On the left sidebar, the 'New Project' button is highlighted with a red arrow. The main area displays a list of projects with columns for Title, Owner, Last Modified, and Actions. The projects listed include 'hw2 datastructure', 'hw1 datastructure', 'lina_groepsopdracht_1', 'or_project_literatuur_tim_jio', 'presentatie_gr_ri_1', 'antwoorden_dictaat_getaltheorie', 'Enqueteverantwoording METEC', 'ISTAT Eindopdracht verslag', 'Eindrapport METEC', and 'Verwerkingsopdrachten week 1 tm 4'. The interface also shows a search bar, a 'You're on the free plan' notification, and an 'Upgrade' button.

Overleaf

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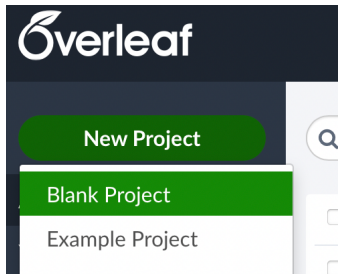
New Project

Search projects...

You're on the free plan ⓘ Upgrade

Title	Owner	Last Modified ▾	Actions
<input type="checkbox"/> hw2 datastructure Tim & Manuel	You	2 months ago by You	
<input type="checkbox"/> hw1 datastructure	You	4 months ago by You	
<input type="checkbox"/> lina_groepsopdracht_1	You	a year ago by You	
<input type="checkbox"/> or_project_literatuur_tim_jio	You	a year ago by You	
<input type="checkbox"/> presentatie_gr_ri_1	You	a year ago by You	
<input type="checkbox"/> antwoorden_dictaat_getaltheorie	You	2 years ago by You	
<input type="checkbox"/> Enqueteverantwoording METEC Jaar 2 × METEC ×	You	2 years ago by You	
<input type="checkbox"/> ISTAT Eindopdracht verslag Jaar 2 ×	You	2 years ago by jioni_dboy	
<input type="checkbox"/> Eindrapport METEC Jaar 2 × METEC ×	You	2 years ago by You	
<input type="checkbox"/> Verwerkingsopdrachten week 1 tm 4 Jaar 2 ×	You	2 years ago by You	

Overleaf



New Project

[Cancel](#)[Create](#)

```
\documentclass{article}
\usepackage[utf8]{inputenc}

\title{Example project}
\author{Vincent Kuhlmann}
\date{February 2023}

\begin{document}

\maketitle

\section{Introduction}

\end{document}
```

Command syntax:

`\xxx{argument1}{argument2}`

`\xxx[optional argument]{argument1}{argument2}`

Example:

`\section{Introduction}`

- 1) **Backslash:** we are starting a command
- 2) **Command name:** 'section', place a header in the document. Takes 1 argument.
- 3) **Argument 1:** the name of the section

```
\documentclass{article}
\usepackage[utf8]{inputenc}

\title{Example project}
\author{Vincent Kuhlmann}
\date{February 2023}

\begin{document}

\maketitle

\section{Introduction}

\end{document}
```

Environment syntax:

```
\begin{xxx}
...
\end{xxx}
```

Example:

```
\begin{center}
```

- 1) **Begin:** We are starting the center environment
- 2) **Body:** The text to be centered on the page
- 3) **End:** Now go back to normal

```
\documentclass{article}
\usepackage[utf8]{inputenc}

\title{Example project}
\author{Vincent Kuhlmann}
\date{February 2023}

\begin{document}

\maketitle

\section{Introduction}

\end{document}
```

Document structure:

- **Preamble.**
This is where configuration goes.
 - `\documentclass`: specify a template.
 - `\usepackage{xxx}`: import package 'xxx'.
 - Other: a.o. setting the title of your document
- **Document body.**
This is where the text and other content go.

What are packages?

L^AT_EX-code written by other people. They can add new commands, change how your document looks, or improve existing functionalities.

Example: package ‘xcolor’ provides the command `\textcolor{red}{some text}`.

Syntax: `\usepackage[aa=6cm,bb,cc=red]{xxx}`

Imports package ‘xxx’. The optional argument is a list of instructions.

Most essential packages

- **Math packages: amsmath, amssymb**

Defines `\begin{pmatrix}`-environment, which is a matrix with parentheses.

- **Layout packages: geometry**

```
\usepackage[a4paper,margin=2.54cm]{geometry}
```

- **Other: graphicx, babel**

Graphicx fixes and improves use of images, Babel translates default terms, e.g. 'Inhoudsopgave' instead of 'Contents'.

Available packages are managed by CTAN. On their website you find package manuals.

Exercises and examples from this presentation will not work if you forget required packages. For a good starting point, see <https://vkuhlmann.com/latex/example>.

Syntax for text?

```
\begin{document}
```

This is some text, very `\textbf{meaningful}` text.

On a new line? And I want spaces, lots of spaces.

This is some text, very `\textbf{meaningful}` text.

```
\end{document}
```

What does this look like in the output?

Syntax for text?

The fix:

```
...  
\usepackage{parskip}  
  
\begin{document}  
  
This is some text, very \textbf{meaningful} text.\\  
On a new line? And I want\ \ \ \ \ spaces,  
\hspace{1cm}lots of spaces.  
  
This is some text, very \textbf{meaningful} text.  
\end{document}
```

Syntax for text? – Special characters

Code	Result
<code>\{</code>	{
<code>\}</code>	}
<code>\%</code>	%
<code>_</code>	—
<code>\textasciicircum</code>	^
<code>\\$</code>	\$
<code>\textbackslash</code>	\
<code>\&</code>	&
<code>\#</code>	#
<code>\textgreater</code>	>
<code>\textless</code>	<

Code	Result
<code>{</code>	Begin group
<code>}</code>	End group
<code>%</code>	Comment
<code>_</code>	Used in maths
<code>^</code>	Used in maths
<code>\$</code>	Math mode
<code>\</code>	Command
<code>&</code>	Column separation
<code>#</code>	Parameter
<code>></code>	>
<code><</code>	<

Syntax for text? – Quotes

'LaTeX' : 'LaTeX'

`LaTeX' : ‘LaTeX’

``LaTeX' ': “LaTeX”

More with text – Text effects

Result	Code	Result	Code
Text	<code>\textbf{Text}</code>	Text	<code>\texttt{Text}</code>
<i>Text</i>	<code>\textit{Text}</code>	Text	<code>{\tiny Text}</code>
TEXT	<code>\textsc{Text}</code>	Text	<code>{\LARGE Text}</code>
<u>Text</u>	<code>\underline{Text}</code>	Text	<code>\textcolor{red}{Text}</code> ¹

Huge, huge, LARGE, Large, large, normalsize, small, footnotesize, scriptsize, tiny

¹`\usepackage{xcolor}`

More with text – Lists

These are the ingredients:

```
\begin{itemize}
  \item Carrots
  \begin{enumerate}
    \item Buy
    \item Peel
    \item Chop
  \end{enumerate}
  \item Onions

  Lipsum dolor sit amet.
  \item Potatoes
\end{itemize}
```

These are the ingredients:

- Carrots

1. Buy

2. Peel

3. Chop

- Onions

Lipsum dolor sit amet.

- Potatoes

Exercises!

Slides and exercises are available at
texnicie.nl

Formulas

Figure

Here you see a penguin:

```
\begin{center}  
  \includegraphics[height=2cm]{penguin.jpg}  
\end{center}
```

Photo by Sue Flood.

Here you see a penguin:



Photo by Sue Flood.

Figure

```
You can see a penguin in Figure~\ref{fig:penguin}.  
\begin{figure}[h]  
  \centering  
  \includegraphics[height=2cm]{penguin.jpg}  
  \caption{A cute penguin. Photo by Sue Flood.}  
  \label{fig:penguin}  
\end{figure}
```

You can see a penguin in Figure 1.



Figure 1: A cute penguin.
Photo by Sue Flood.

Figure placement

`\begin{figure}[h]`

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetur id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.. Zie hier-voor Figuur 1.



Figure 1: Voorbeeld van figuurplaatsing.

Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Do-

nec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

Figure placement

`\begin{figure}[t]`



Figure 2: Voorbeeld van figuurplaatsing.

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Zie hiervoor Figuur 2.

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nec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

Figure placement

`\begin{figure}[b]`

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetur id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

Zie hiervoor Figuur 3.

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Figure 3: Voorbeeld van figuurplaatsing.

nec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

Figure placement

`\begin{figure}[p]`

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetur id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

Zie hiervoor Figuur 4.

Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.



Figure 4: Voorbeeld van figuurplaatsing.

Figure placement

Specifieer een of meer van de onderstaande letters:

- ▶ h (HERE): Figure can come here.
- ▶ t (TOP): Figure can come at the top of the page.
- ▶ b (BOTTOM): Figure can come at the bottom of the page
- ▶ p (PAGE): Figure can come on a special page for figures.
- ▶ !: Override internal parameters for floats.
- ▶ H (HERE): No floating, always here. (`\usepackage{float}`)

Bijvoorbeeld: `\begin{figure}[ht]`

When working with images: `\usepackage{graphicx}`

Dimensions

- Full linewidth

```
\includegraphics[width=\linewidth]{assets/pinguin.jpg}
```

- 90% linewidth

```
\includegraphics[width=0.9\linewidth]{assets/pinguin.jpg}
```

- Width maximally 90% linewidth and height maximally 5 cm

```
\includegraphics[  
    width=0.9\linewidth,height=5cm,keepaspectratio  
]{assets/pinguin.jpg}
```

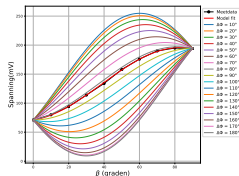
Subfigure

```

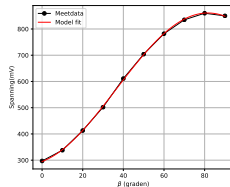
\usepackage{subcaption}
...

\begin{figure}[htbp]
  \centering
  \begin{subfigure}[b]{0.45\textwidth}
    \includegraphics[width=\textwidth]{...}
    \caption{BB}
    \label{fig:dphiExample}
  \end{subfigure}\quad
  \begin{subfigure}[b]{0.45\textwidth}
    \includegraphics[width=\textwidth]{...}
    \caption{CC}
    \label{fig:fitExample}
  \end{subfigure}
  \caption{Meerdere afbeeldingen naast elkaar!}
\end{figure}

```



(a) BB



(b) CC

Figuur 1: Multiple images next to eachother!

Exercises!

Slides and exercises are available at
texnicie.nl

Tables

Finishing notes

The end

Questions?

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`contact@texnicie.nl`

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