

# Overleaf Modules and Format

Mazen Malak  
(Dated: August 31, 2023)

Overleaf is a cloud-based LaTeX module, think of it as google drive but for your lab reports. This document aims to demonstrate how to create and format tables, figures, sections, and equations in a LaTeX environment. The process of creating these objects is trivial and becomes secondhand nature the more lab reports you write. Keep this manual handy so that you can reference it as you write your lab reports

## I. DOCUMENT BUILD

Create an Overleaf account at <https://www.overleaf.com/>. Once you create your account you can begin creating your lab reports.

In a new document, you will notice a `\documentclass[]{}{}` section at the first line. This will setup your document style and is very specific. Figure 1 will demonstrate how this document was built

The `\usepackage{}` sections offer a wide variety of modules that can be used while you write your lab reports.

The most general ones are `graphicx`, `dcolum`, and `bm`. While the last two aren't necessary, they serve an aesthetic purpose to line tables nicely and bolden equations while in math mode.

Figure 1 displays the beginning document including how to create an author, title, date, and abstract.

```
1 \documentclass[
2 reprint,
3 ]{revtex4-2}
4
5 \usepackage{graphicx}% Include figure files
6 \usepackage{bm}
7 \usepackage{dcolum}
8 \begin{document}
9 \title{Cheat Sheet for Overleaf modules and Formatting}
10 \author{Mazen Malak}
11 \date{\today}
12
13 \begin{abstract}
14 Overleaf is a cloud-based LaTeX module, think of it as google drive but for your lab reports. This
15 document aims to demonstrate how to create and format tables, figures, sections, and equations in a
16 LaTeX environment. The process of creating these objects is trivial and becomes secondhand nature the
17 more lab reports you write. Keep this manual handy so that you can reference it as you write your lab
18 reports
19 \end{abstract}
20 \maketitle
21
22 \section{Document build}
23
24 Create an Overleaf account at \verb|https://www.overleaf.com/|. Once you create your account you can
```

FIG. 1. format to begin document

`\begin{abstract}` should come before `\maketitle` for this will create it at the top of the page and have it set up in one column rather than two

`\section{}` will of course create a new section. `\subsection{}` will of course add a subsection to the current section

## II. EQUATIONS AND GREEK LETTERS

To create an equation, follow figure 2. This will always display your equations centered as well as numbered.

```
\begin{equation}
F=ma
\end{equation}
```

FIG. 2. Code to produce equation 1

$$F = ma \quad (1)$$

To create an equation that contains the Greek and Hebrew alphabet:

```
\begin{equation}
F\textsubscript{friction}=\mu N
\end{equation}
```

FIG. 3. Code to produce equation 2

$$F_{\text{friction}} = \mu N \quad (2)$$

The entire alphabet is at your disposal, if you don't remember the name of one of these, you can use "Detexify LaTeX handwritten symbol recognition." This site allows you to draw a symbol and it will display the symbol that is needed.

The text subscript feature is self-explanatory, it subscripts a variable. Let's say you require a fraction:

```
\begin{equation}
P=\frac{I}{A}
\end{equation}
```

FIG. 4. Code to produce equation 3

$$P = \frac{I}{A} \quad (3)$$

in `\frac{}{}`, the first bracket will always be the numerator, the second bracket the denominator.

### A. Displaying Math In Text

Let's say you want  $\Omega$  or  $F = ma$  or  $10^{-100}$  in your text as you explain something. Use  $\$[math]\$$ . An example of this is displayed in Figure 5.

Let's say you want  $\Omega$  or  $F=ma$  or  $10^{-100}$  in your text as you explain something.

FIG. 5. Example text to display math in text

### III. CREATING FIGURES

To create a figure/picture, follow the code posted in figure 6

```
\begin{figure}
\centering
\includegraphics[width=0.8\linewidth]{Screen Shot 2023-06-06 at 11.54.02 AM.png}
\caption{Code to setup a figure}
\label{fig:enter-label}
\end{figure}
```

FIG. 6. Code to set up a figure

`\includegraphics` is our main piece of code. Inside `[\ ]`, we want to add `width=[some number<1]\linewidth`. This allows us to have the max image width of our column and scale it however we want.

Inside `{ }` we want to add to the `png/jpeg`. You can upload whatever image you want by hitting the upload button in the menu tab (the third button on the right that has a symbol of an arrow pointing up). It is important to add `[h]` after `\begin{figure}` as this will place your image as close to the desired spot as possible.

### IV. CREATING A TABLE

Creating a table can be the most challenging one to get used to as it takes quite a bit of time. Try to plan out how your table will look before you start. Figure 6 includes basic table format. Table 1 is the output of our code.

Table Title		
Component	Value	Like them?
Resistor	100m $\Omega$	yes
Capacitor	7.2 $\mu$ F	no
Battery	5V	yes

TABLE I. Building a table

As seen in figure 6, the `\begin{table}` is what sets up our table environment. `\begin{tabular}` sets up what we need to input our values. The structure of building a table comes with practice, a quick run down:

```
\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|}
\hline
\multicolumn{3}{|c|}{Table Title} \\
\hline
Component & Value & Like them? \\
\hline
Resistor & 100m $\Omega$  & yes \\
Capacitor & 7.2  $\mu$ F & no \\
Battery & 5V & yes \\
\hline
\end{tabular}
\caption{Building a table}
\label{tab:my_label}
\end{table}
```

FIG. 7. Code to display Table 1

- `{|c|c|c|}` –  $\rightarrow$  every c is a new column with every | a new line separating/bordering the column.
- `\hline` –  $\rightarrow$  created a vertical line separating/bordering where desired
- `\multicolumn{num}{|c|}{input}` –  $\rightarrow$  combines columns to make one column. The set up is the number of columns originally used, then style of the column, then text input
- `text & text & text` –  $\rightarrow$  creates a new line for the table. `&` acts as the separator between the columns
- `\\` –  $\rightarrow$  creates a new line of the table