

Introduction to Latex

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L^AT_EX is a tool used to create professional-looking documents. It is based on the WYSI-WYM (what you see is what you mean) idea, meaning you only have focus on the contents of your document and the computer will take care of the formatting. Instead of spacing out text on a page to control formatting, as with Microsoft Word or LibreOffice Writer, users can enter plain text and let L^AT_EX take care of the rest.

latex is the mathematical typesetting software

1 Math

Lower case Greek letters are written as ω δ etc. while upper case Greek letters are written as Ω Δ .

Mathematical operators are prefixed with a backslash as $\sin(\beta)$, $\cos(\alpha)$, $\log(x)$ etc.

We write integrals using \int and fractions using $\frac{a}{b}$. Limits are placed on integrals using superscripts and subscripts:

$$\int_0^1 \frac{dx}{e^x} = \frac{e-1}{e}$$

Subscripts in math mode are written as a_b and superscripts are written as a^b . These can be combined and nested to write expressions such as

$$T_{j_1 j_2 \dots j_q}^{i_1 i_2 \dots i_p} = T(x^{i_1}, \dots, x^{i_p}, e_{j_1}, \dots, e_{j_q})$$

$$\frac{1}{\sqrt{x}}$$

$$\left(\frac{1}{\sqrt{x}}\right)$$

$$1 + 2 = 3$$

$$1 + 2 = 3$$

$$1 = 3 - 2$$

$$f(x) = x^2$$

$$g(x) = \frac{1}{x}$$

$$F(x) = \int_b^a \frac{1}{3}x^3$$

$$\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

$$\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

2 Texts

Bold, italics and underlining:

Some of the **greatest** discoveries in science were made by *accident*.

Comments:

Hyperlink:

This is my link: [LaTeX Symbols](#).

Another tool: [LaTeX Table Generator](#).

This text is blue.

This text is red

3 Adding Pictures

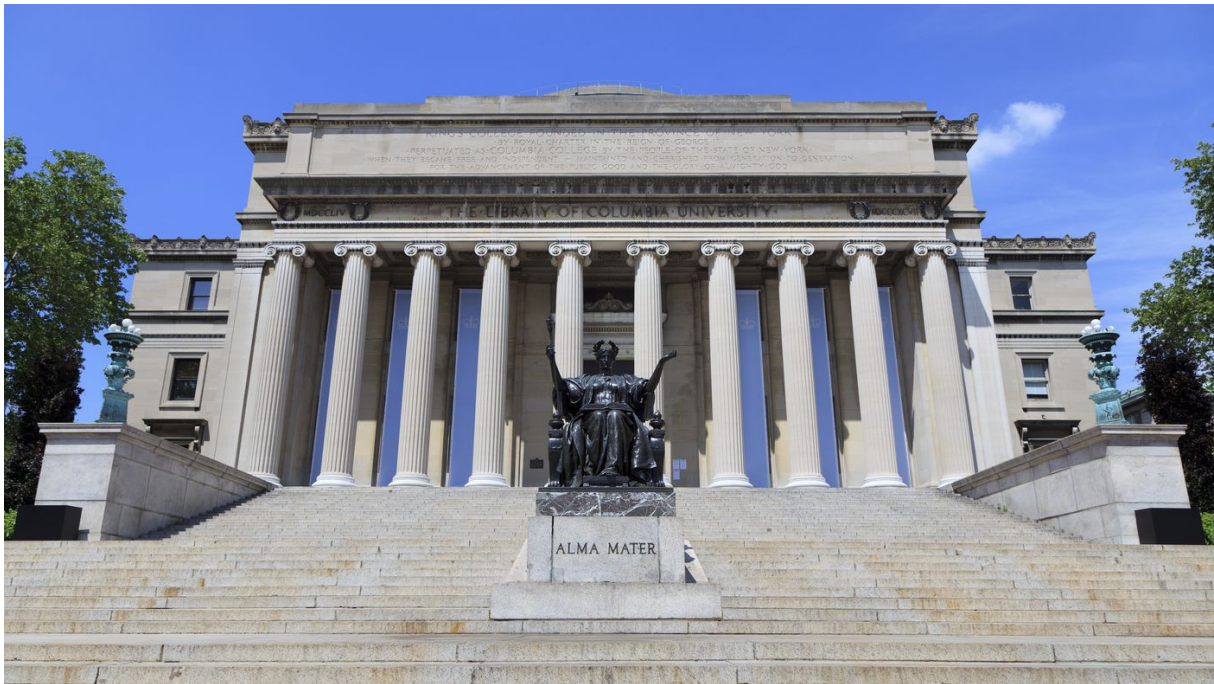


Figure 1: Columbia University

<https://www.overleaf.com/project/5f6e5c34a9b2b800014ea7be> Image positioning:

h (here) - same location

t (top) - top of page

b (bottom) - bottom of page

p (page) - on an extra page

! (override) - will force the specified location

4 Tables

Table 1: Your first table.

Value 1	Value 2	Value 3
α	β	γ
1	1110.1	a
2	10.1	b
3	23.113231	c

5 Sections and Lists

5.1 This is Section 1

- This is Item 1
- This is Item 2

5.2 This is Section 2

- This is Item 2.1
- This is Item 2.2

6 Code

```
library(mnet)
```

```
library(VGAM)
```

```
library(dplyr)
```

```
normal = c(577,192,682,164,145,245)
```

```
border = c(27,20,46,4,15,47)
abnormal = c(7,3,11,0,7,27)
age = factor(c(rep("< 40",3),rep("40-59",3)),levels = c("< 40", "40-59"))
smoke = factor(rep(c("never","former","current"),2),levels = c("never","former","current"))
dat = data.frame(normal,border,abnormal, age, smoke)
```