



ÉCOLE CENTRALE DE LYON

REPORT

L^AT_EX workspace

HELP GUIDE & GALLERY

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Dedicated to

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List of Acronyms

FPS	Frame per Second
-----	------------------

Glossary

computer	a programmable machine that receives input, stores and manipulates data, and provides output in a useful format
-----------------	---

Nomenclature

This is the preamble of the nomenclature.

Probability

This is an intertext in the nomenclature

Ω	Sample space
----------	--------------

Sets

\mathbb{N}	Set of the natural numbers
--------------	----------------------------

\mathbb{R}	Set of the real numbers
--------------	-------------------------

Part I

BASIC USE CASES

Chapter 1

Text

1.1. Paragraphs

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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.

Notes — Use the notes environment to display a note box.

1.2. Lists

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis.

1. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum

ut, placerat ac, adipiscing vitae, felis.

2. 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.
 3.
 - a) Cras viverra metus rhoncus sem.
 - b) Nulla et lectus vestibulum urna fringilla ultrices.
 4. hasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc.
- 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.
 - hasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc.

1.3. Margin lines

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.

*Use the
\marginpar
macro to insert text
on the margin*

Chapter 2

Tables & figures

2.1. Tables

The class file provides custom macros L, R and C that can be used in conjunction with tabularx for automatic line wrapping within cells. Use the S to typeset numeric columns with siunitx.

Title 1		Title 2	Title 3
Element 1	Some text		10.355
Element 2	A little more text over here		2.543
Element 3	A long line of text to test automatic line wrapping		28.730

Table 2.1 | Simple table example

Use \mcx and \mrx for multicolumn and multirow cells.

Sample	I		II	
	A	B	C	D
S1	5	8	12	2
S2	6	9	2	6
S3	7	9	5	8
S4	8	9	8	2

Table 2.2 | Table with \mcx and \mrx macros

Use the `longtable` environment (or `xltable` if you want to provide the width of the table as an argument) to display tables across multiple pages.

Table 2.3 | Example of longtable

[illegible]

Continued on next page

Table 2.3 | Example of longtable

Title 1	Title 2	Title 3
One	abcdef ghijklmn	123.456778
One	abcdef ghijklmn	123.456778
One	abcdef ghijklmn	123.456778
One	abcdef ghijklmn	123.456778
One	abcdef ghijklmn	123.456778
One	abcdef ghijklmn	123.456778
One	abcdef ghijklmn	123.456778

2.2. Figures

Use the subfigure environment for subfigures.



(a) Image 1



(b) Image 2

Figure 2.1 | An example of subfigure

Chapter 3

Maths

3.1. Equations

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis.

$$\sum_{k=1}^{\infty} \frac{1}{k^2} = \frac{\pi^2}{6}. \quad (3.1.1)$$

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.

$$\begin{aligned} f(x) &= x(x-1)^2 \\ &= x(x^2 - 2x + 1) \\ &= x^3 - 2x^2 + x. \end{aligned}$$

3.2. Theorems

Theorem 3.2.1 *This is an important theorem.*

Proof. The proof is left as an exercise. ■

You can also define a restatable theorem. Useful for restating the theorem when the proofs are in the appendices.

Theorem 3.2.2 (Goldbach's conjecture) *Every even integer greater than 2 can be expressed as the sum of two primes.*

And then, we recall Theorem [3.2.2](#).

Theorem 3.2.2 (Goldbach's conjecture) *Every even integer greater than 2 can be expressed as the sum of two primes.*

Chapter 4

Algorithms & code blocks

4.1. Algorithms

Use the `algorithm` environment to display algorithms in pseudocode. A list of algorithms can be generated using the macro `\listofalgorithms`.

Algorithm 1 Counting mismatches between two packed DNA strings

```
function DISTANCE( $x, y$ )  
   $\delta \leftarrow 0$   
  for  $i \leftarrow 1$  to  $n$  do  
    if  $x_i \oplus y_i \neq 0$  then  
       $\delta \leftarrow \delta + 1$   $\triangleright \oplus$ : bitwise exclusive-or  
    end if  
  end for  
  return  $\delta$   
end function
```

4.2. Code blocks

You can use `\mintinline{latex}\{ $a+b$ \}` to highlight source code inline. Use the `code` environment to display a code block. A list of listings can be generated using the macro `\listoflistings`.

```
class Person:
    def __init__(self, name="John", age=22):
        self.name = name
        self.age = age
```

Listing 1 | Code snippet

Part II

ADVANCED USE CASES

Chapter 5

Python_{TEX} integration

5.1. Console

Use the `pyconsole` environment to interactively show results in a Python console.

```
>>> 1+2  
3
```

Other programming languages are supported, check the Python_{TEX} documentation.

5.2. Automatic figure generation

Figure 5.1 is automatically built from `create_figure.py` and rendered using \LaTeX .

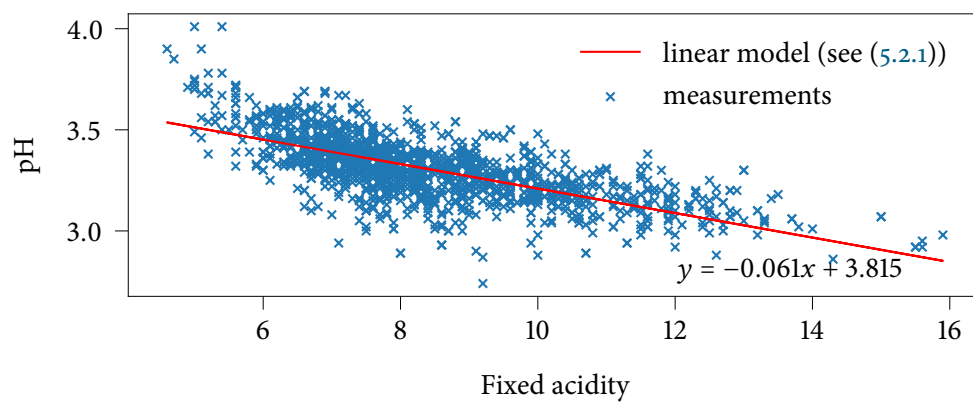


Figure 5.1 | Figure automatically generated from `create_figure.py`

Use the `pysub` environment to get values from Python to \LaTeX . Here $a = -0.061$ and $b = 3.815$. Here is an equation that we would like to reference in the plot:

$$y = ax + b. \tag{5.2.1}$$

5.3. Automatic table generation

The following table is generated automatically from `create_table.py` using Python_{TEX} integration.

Table 5.1 | Table automatically generated from `create_table.py`

Name	GPA
John	3.89
Peter	2.85
Eva	3.67

Chapter 6

Glossary, index & nomenclature

6.1. Glossary

The Computer is an entry defined in the glossary. Use `glossary.tex` to define new entries. You can also define acronyms like Frame per Second (FPS) and refer to it with `\acrlong` (Frame per Second) or `\acrshort` (FPS).

6.2. Index

Use the `\index` macro to register a word in the index. For example, here we index the word index. We can also create subentries.

6.3. Nomenclature

Use the `\nomenclature` macro to add symbols to the nomenclature. Use the optional argument to specify a group. For instance, we can add the symbol Ω to the nomenclature. We can also add \mathbb{N} and \mathbb{R} . You can customize the headers of the nomenclature by editing `nomenc1_header.tex`.

APPENDICES

Appendix A

Appendix

Use \appendices to switch to appendices.

Index

I

index	13
first subentry	13
second subentry	13

L

last entry	13
------------------	----

O

other entry	13
-------------------	----