

Department of *Your Department*
Imperial College London

Thesis Title

Author

Today's date

Submitted in partial fulfilment of the requirements for the degree of Doctor of
Philosophy in the Department of *Your Department*.

Statement of Originality

Declaration

Author

Date

Copyright Declaration

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Abstract

No more than 300 words.

This is a thesis template for Imperial College London. It meets the college PhD thesis guideline (last checked 2025).

Acknowledgements

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Nomenclature

Acronyms

MSE Mean Squared Error

Functions/operators

Δ Vector Laplacian operator

$\| * \|_2^2$ ℓ_2 norm

Matrix/tensors

Φ POD modes

U Dataset containing only the velocity

Non-dimensional group

Re Reynolds Number

Symbols

u Velocity (local, instantaneous)

v Vorticity (local, instantaneous)

t Time

x Spatial dimension

Chapter 1

Introduction

First, the most command things in a thesis (Section 1.1). Then, let me introduce you to defining your own macros (Section 1.2) and customizing the template using preamble (Section 1.3).

1.1 Basic commands

Here are some examples of things we usually need for a thesis.

- Citing things and cross-referencing
- Figures
- Tables
- Algorithm
- Maths
- Code

Cite things like Adrian (1979) and (Agostini 2020).

Cross-reference by using `\label{label} \ref{label}`. There are already plenty of examples in this document.

Insert a figure (like Figure 1.1), by using the `figure` environment.

Insert a table (like Table 1.1), by using the `table` environment.

Column 1	Column 2
	something here

Table 1.1: An example table



Figure 1.1: Photo by Hans-Jurgen Mager on [Unsplash](#)

Figures and tables are floats, meaning that they may get moved to a different page as you write depending on how much space there is. Of course, there are other things that are also floats. Use `\FloatBarrier` to place all the floats defined before this line above this line in the text.

Write an algorithm with the package *algorithm2e*, which we have already included in the *preamble.sty*.

Algorithm 1: Some algorithm

Input : A - Pre-computed matrix A

B - Pre-computed matrix B

α - A user defined coefficient

Output: C - The final output of this algorithm

$C \leftarrow A + \alpha B$ // start with the output of the network

return C

Write an equation inline like this: $5 \sin \theta$, or like

$$a = 25. \tag{1.1}$$

Cross-reference this equation like Equation (1.1)

Write codes inline `import numpy`. Or write codes in a block. Right now I have set the styles to be Python, but you can change that.

```
import numpy as np

a = np.arange(10)*0.2
a[2] = 0.0
print(a)
```

1.2 Defining macros

Define all new commands that you plan to use repeatedly in *mymacros.sty*. Commands can be defined three different ways: `\edef`, `\def`, or `\newcommand`.

For now I have defined the following commands:

- `\comment{your text}` - makes your text red.
- `\high{superscript}` - make superscript.

And these Maths mode commands:

- `\mat{}` - matrix.
- `\vector{}` - vector.
- `\Tr{}` - trace of a matrix.
- `\argmin` - print argmin.
- `\sym{}` - for acronyms in Maths mode.
- `\Rey` - print Reynolds number *Re*

At the top of *main.tex*, we import our command file by using the line `\usepackage{mymacros}`. When writing equations, we can use the commands we defined in *mymacros.sty*.

$$MSE = \|A\|_2^2 \tag{1.2}$$

$$Re = 1/\nu$$

We can use our other defined commands as well, such as `\comment` to make text red.

1.3 Changing layouts and working with preamble

We use *preamble.sty* to customize the style of the file and include it at the beginning of *main.tex*. Here are a list of things you can easily customize in this template.

- Title page style
- Page margin, line spacing, page headers
- Font and font size
- Colours, and colour of links/citations...
- Bibliography and reference style
- Table style

- Default coding language, and the default display style for blocks of codes

Use the comments in *preamble.sty* to find out how to change the styles of things. Of course, you can customize a lot more, but this template only set up a few features.

Bibliography

Adrian, R. J., 1979. 'Conditional eddies in isotropic turbulence', *The Physics of Fluids* **22**(11), 2065–2070.

Agostini, L., 2020. 'Exploration and prediction of fluid dynamical systems using auto-encoder technology', *Physics of Fluids* **32**(6).

Appendices

Appendix A

Derivations

A.1 Algorithm A

Appendix B

Copyright