

# **Writing your PhD thesis in L<sup>A</sup>T<sub>E</sub>X**

## **Using the CU thesis template**

**by**

**Another Proud Author**

**December 2020**



Optional Name of Faculty (not normally required)

Optional CU Research Centre or School (not normally required)

*A thesis submitted in partial fulfilment of the University's requirements  
for the Degree of Doctor of Philosophy*



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I would like to dedicate this thesis to humanity . . .

(All the textual content will be replaced with you own work, see the first chapter on how to get started, or begin with the brief introduction at [https://tekeye.uk/free\\_resources/thesis-template-in-latex-for-cu-phd.](https://tekeye.uk/free_resources/thesis-template-in-latex-for-cu-phd.))



## **Acknowledgements**

And I would like to acknowledge ...





## **Abstract**

This is where you write your abstract ...



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# Nomenclature

## Roman Symbols

$F$  complex function

## Greek Symbols

$\gamma$  a simply closed curve on a complex plane

$i$  unit imaginary number  $\sqrt{-1}$

$\pi$   $\simeq 3.14\dots$

## Superscripts

$j$  superscript index

## Subscripts

0 subscript index

crit Critical state

## Other Symbols

$\oint_{\gamma}$  integration around a curve  $\gamma$

## Acronyms / Abbreviations

BEM Boundary Element Method

CD Contact Dynamics

CFD Computational Fluid Dynamics

CIF Cauchy's Integral Formula

CU	Coventry University
CUED	University of Cambridge Department of Engineering thesis template
CULTT	Coventry University L <sup>A</sup> T <sub>E</sub> X Thesis Template
CK	Carman - Kozeny
DEM	Discrete Element Method
DKT	Draft Kiss Tumble
DNS	Direct Numerical Simulation
EFG	Element-Free Galerkin
FEM	Finite Element Method
FVM	Finite Volume Method
GPU	Graphics Processing Unit
LBM	Lattice Boltzmann Method
LES	Large Eddy Simulation
MPM	Material Point Method
MRT	Multi-Relaxation Time
PFEM	Particle Finite Element Method
PIC	Particle-in-cell
PPC	Particles per cell
RVE	Representative Elemental Volume
SH	Savage Hutter
USF	Update Stress First
USL	Update Stress Last

# Chapter 1

## Introduction to CULTT

### 1.1 What is CULTT?

The Coventry University  $\LaTeX$  Thesis Template (CULTT) is designed as a starting point for writing and formatting a Coventry University (CU) Thesis prior to submission for examination and printing. This template is not official and it is up to the thesis author to ensure that the format, requirements and contents of the thesis are correct. However, this template should prove useful for those using  $\LaTeX$  to prepare their CU Thesis.

CULTT was initially created as a CU Thesis template for use on ShareLaTeX, which has now merged with Overleaf, an online service for producing documents with  $\LaTeX$ . Overleaf also supports collaborative working, see <https://www.overleaf.com/> for further information.

Rather than reinvent the wheel CULTT was derived from an existing thesis template. There are plenty of examples available. For CULTT the basis was the Cambridge University Engineering Department's (CUED) thesis template.

If you are not using  $\LaTeX$  you will not need CULTT. However, the use of  $\LaTeX$  for producing all academic documents (not only a thesis) is recommended. Although  $\LaTeX$  may appear strange to those who normally use word processing software, the benefits are immense once you get use to it. Overleaf has some great documentation to help get started, see <https://www.overleaf.com/learn/>. The  $\LaTeX$  Project website is at <https://www.latex-project.org/>. If not using an online  $\LaTeX$  service then install a  $\LaTeX$  environment onto your computer. MiKTeX is a good package which can be installed on Windows, Mac, and Linux, see <https://miktex.org/> (also available from the CU Cloudpaging Player Apps service). MiKTeX includes the TeXworks editor, <https://www.tug.org/texworks/>. A  *$\LaTeX$  for Beginners* document is available at <http://www.docs.is.ed.ac.uk/skills/documents/3722/3722-2014.pdf>.

## 1.2 Using CULTT

CULTT can be used on a local computer or uploaded to a online L<sup>A</sup>T<sub>E</sub>X service. The thesis template is divided into sub-folders for ease of organisation. The template provides lots of examples of textual constructs that may be required in the thesis. All of the the textual content (and constructs) in the various L<sup>A</sup>T<sub>E</sub>X files (e.g. this Introduction chapter) will be replaced with the authors own content. The content stored in the *tex* files is brought together in the top level (root) *thesis.tex*, which includes the other tex files in the sub-folders as required. This allows the thesis to be divided into smaller chunks for better management and safety. Working on smaller sections of the thesis reduces the chance of accidentally destroying large parts of text. (Always take regular backups of all work produced.)

A *L<sup>A</sup>T<sub>E</sub>X class file* is a file, which holds style information for a particular L<sup>A</sup>T<sub>E</sub>X project.

When your final CU Ethics PDF is available (<https://ethics.coventry.ac.uk/>) replace the PDF in the *Ethics* folder.

### 1.2.1 Coventry University thesis writing resources

There are a several requirements to meet for a correct CU Thesis submission. They are covered by the CU Academic Regulations, visit <http://www.coventry.ac.uk/life-on-campus/the-university/key-information/registry/academic-regulations/> and download section 8 to read **8.12 The higher degree thesis**.

The CU Student Portal, accessed via the *Portals* link on the CU website, <https://share.coventry.ac.uk/students>, has links to relevant documents in the *Doctoral College* section (under *Study at CU*). See the *Preparing for your PRP and Viva* section to find the **Thesis Information PDF** (called *Thesis Requirements.pdf*).

Further CU help on thesis writing can be obtained from Coventry University's Centre for Academic Writing (CAW), <https://cawbookings.coventry.ac.uk/>. They also look after the CU Harvard Referencing Style (short linked at <https://goo.gl/9jxdPX>).

# Chapter 2

## Lorem Ipsum

### 2.1 What is loren ipsum?

Lorem Ipsum is simply dummy text of the printing and typesetting industry (see Section 2.3). Lorem Ipsum (Aupetit, 1991) has been the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of type and scrambled it to make a type specimen book. It has survived not only five centuries, but also the leap into electronic typesetting, remaining essentially unchanged. It was popularised in the 1960s with the release of Letraset sheets containing Lorem Ipsum passages, and more recently with desktop publishing software including versions of Lorem Ipsum (Abramovich et al., 1995; Conway, 1990; Ljubič and Macaev, 1965).

### 2.2 Why do we use loren ipsum?

It is a long established fact that a reader will be distracted by the readable content of a page when looking at its layout. The point of using Lorem Ipsum is that it has a more-or-less normal distribution of letters, as opposed to using 'Content here, content here', making it look like readable English. Many desktop publishing packages and web page editors now use Lorem Ipsum as their default model text, and a search for 'lorem ipsum' will uncover many web sites still in their infancy. Various versions have evolved over the years, sometimes by accident, sometimes on purpose (injected humour and the like).

## 2.3 Where does it come from?

Contrary to popular belief, Lorem Ipsum is not simply random text. It has roots in a piece of classical Latin literature from 45 BC, making it over 2000 years old. Richard McClintock, a Latin professor at Hampden-Sydney College in Virginia, looked up one of the more obscure Latin words, *consectetur*, from a Lorem Ipsum passage, and going through the cites of the word in classical literature, discovered the undoubtable source. Lorem Ipsum comes from sections 1.10.32 and 1.10.33 of "de Finibus Bonorum et Malorum" (The Extremes of Good and Evil) by Cicero, written in 45 BC. This book is a treatise on the theory of ethics, very popular during the Renaissance. The first line of Lorem Ipsum, "Lorem ipsum dolor sit amet..", comes from a line in section 1.10.32.

The standard chunk of Lorem Ipsum used since the 1500s is reproduced below for those interested. Sections 1.10.32 and 1.10.33 from "de Finibus Bonorum et Malorum" by Cicero are also reproduced in their exact original form, accompanied by English versions from the 1914 translation by H. Rackham

"Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum."

Section 1.10.32 of "de Finibus Bonorum et Malorum", written by Cicero in 45 BC: "Sed ut perspiciatis unde omnis iste natus error sit voluptatem accusantium doloremque laudantium, totam rem aperiam, eaque ipsa quae ab illo inventore veritatis et quasi architecto beatae vitae dicta sunt explicabo. Nemo enim ipsam voluptatem quia voluptas sit aspernatur aut odit aut fugit, sed quia consequuntur magni dolores eos qui ratione voluptatem sequi nesciunt. Neque porro quisquam est, qui dolorem ipsum quia dolor sit amet, consectetur, adipisci velit, sed quia non numquam eius modi tempora incidunt ut labore et dolore magnam aliquam quaerat voluptatem. Ut enim ad minima veniam, quis nostrum exercitationem ullam corporis suscipit laboriosam, nisi ut aliquid ex ea commodi consequatur? Quis autem vel eum iure reprehenderit qui in ea voluptate velit esse quam nihil molestiae consequatur, vel illum qui dolorem eum fugiat quo voluptas nulla pariatur?"

1914 translation by H. Rackham: "But I must explain to you how all this mistaken idea of denouncing pleasure and praising pain was born and I will give you a complete account of the system, and expound the actual teachings of the great explorer of the truth, the master-builder of human happiness. No one rejects, dislikes, or avoids pleasure itself, because it is pleasure, but because those who do not know how to pursue pleasure rationally encounter consequences that are extremely painful. Nor again is there anyone who loves

or pursues or desires to obtain pain of itself, because it is pain, but because occasionally circumstances occur in which toil and pain can procure him some great pleasure. To take a trivial example, which of us ever undertakes laborious physical exercise, except to obtain some advantage from it? But who has any right to find fault with a man who chooses to enjoy a pleasure that has no annoying consequences, or one who avoids a pain that produces no resultant pleasure?"

Section 1.10.33 of "de Finibus Bonorum et Malorum", written by Cicero in 45 BC: "At vero eos et accusamus et iusto odio dignissimos ducimus qui blanditiis praesentium voluptatum deleniti atque corrupti quos dolores et quas molestias excepturi sint occaecati cupiditate non provident, similique sunt in culpa qui officia deserunt mollitia animi, id est laborum et dolorum fuga. Et harum quidem rerum facilis est et expedita distinctio. Nam libero tempore, cum soluta nobis est eligendi optio cumque nihil impedit quo minus id quod maxime placeat facere possimus, omnis voluptas assumenda est, omnis dolor repellendus. Temporibus autem quibusdam et aut officiis debitis aut rerum necessitatibus saepe eveniet ut et voluptates repudiandae sint et molestiae non recusandae. Itaque earum rerum hic tenetur a sapiente delectus, ut aut reiciendis voluptatibus maiores alias consequatur aut perferendis doloribus asperiores repellat."

1914 translation by H. Rackham: "On the other hand, we denounce with righteous indignation and dislike men who are so beguiled and demoralized by the charms of pleasure of the moment, so blinded by desire, that they cannot foresee the pain and trouble that are bound to ensue; and equal blame belongs to those who fail in their duty through weakness of will, which is the same as saying through shrinking from toil and pain. These cases are perfectly simple and easy to distinguish. In a free hour, when our power of choice is untrammelled and when nothing prevents our being able to do what we like best, every pleasure is to be welcomed and every pain avoided. But in certain circumstances and owing to the claims of duty or the obligations of business it will frequently occur that pleasures have to be repudiated and annoyances accepted. The wise man therefore always holds in these matters to this principle of selection: he rejects pleasures to secure other greater pleasures, or else he endures pains to avoid worse pains."





# Chapter 3

## Examples of text

### 3.1 Lorem Ipsum

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Sed vitae laoreet lectus. Donec lacus quam, malesuada ut erat vel, consectetur eleifend tellus. Aliquam non feugiat lacus. Interdum et malesuada fames ac ante ipsum primis in faucibus. Quisque a dolor sit amet dui malesuada malesuada id ac metus. Phasellus posuere egestas mauris, sed porta arcu vulputate ut. Donec arcu erat, ultrices et nisl ut, ultricies facilisis urna. Quisque iaculis, lorem non maximus pretium, dui eros auctor quam, sed sodales libero felis vel orci. Aliquam neque nunc, elementum id accumsan eu, varius eu enim. Aliquam blandit ante et ligula tempor pharetra. Donec molestie porttitor commodo. Integer rutrum turpis ac erat tristique cursus. Sed venenatis urna vel tempus venenatis. Nam eu rhoncus eros, et condimentum elit. Quisque risus turpis, aliquam eget euismod id, gravida in odio. Nunc elementum nibh risus, ut faucibus mauris molestie eu.

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Morbi bibendum est aliquam, hendrerit dolor ac, pretium sem. Nunc molestie, dui in euismod finibus, nunc enim viverra enim, eu mattis mi metus id libero. Cras sed accumsan justo, ut volutpat ipsum. Nam faucibus auctor molestie. Morbi sit amet eros a justo pretium aliquet. Maecenas tempor risus sit amet tincidunt tincidunt. Curabitur dapibus gravida gravida. Vivamus porta ullamcorper nisi eu molestie. Ut pretium nisl eu facilisis tempor. Nulla rutrum tincidunt justo, id placerat lacus laoreet et. Sed cursus lobortis vehicula. Donec sed tortor et est cursus pellentesque sit amet sed velit. Proin efficitur posuere felis, porta auctor nunc. Etiam non porta risus. Pellentesque lacinia eros at ante iaculis, sed aliquet ipsum volutpat. Suspendisse potenti.

Ut ultrices lectus sed sagittis varius. Nulla facilisi. Nullam tortor sem, placerat nec condimentum eu, tristique eget ex. Nullam pretium tellus ut nibh accumsan elementum. Aliquam posuere gravida tellus, id imperdiet nulla rutrum imperdiet. Nulla pretium ullamcorper quam, non iaculis orci consectetur eget. Curabitur non laoreet nisl. Maecenas lacinia, lorem vel tincidunt cursus, odio lorem aliquet est, gravida auctor arcu urna id enim. Morbi accumsan bibendum ipsum, ut maximus dui placerat vitae. Nullam pretium ac tortor nec venenatis. Nunc non aliquet neque.

## 3.2 Some basics

Let us start with **some bold font** and then *some forced italic* and contrast that with *emphasise* (which may not be italic in some L<sup>A</sup>T<sub>E</sub>X packages). Why not include a footnote that appears at the bottom of the page<sup>1</sup>.

## 3.3 Reasonably long section title

For this section notice how the section title in the index has been replaced by an alternative.

---

<sup>1</sup>My footnote goes blah blah blah! ...

## 3.4 Examples of lists

How do you put a list in a  $\text{\LaTeX}$  document? Use *enumerate*, *itemize*, or *description*.

### Enumeration

1. The first topic is dull
2. The second topic is duller
  - (a) The first subtopic is silly
  - (b) The second subtopic is stupid
3. The third topic is the dullest

### Itemize

- The first topic is dull
- The second topic is duller
  - The first subtopic is silly
  - The second subtopic is stupid
- The third topic is the dullest

### Description

**The first topic** is dull

**The second topic** is duller

**The first subtopic** is silly

**The second subtopic** is stupid

**The third topic** is the dullest

## Advanced enumeration

The  $\text{\LaTeX}$  package **enumitem** must be left uncommented in the **preamble.tex** for these lists to display correctly. Firstly different alphas for first ordering list items and space between items removed.

- a) The first topic is dull
- b) The second topic is duller
  - (a) The first subtopic is silly
  - (b) The second subtopic is stupid
- c) The third topic is the dullest

And now a legal list.

## Legal numbering

1. The first topic is dull
2. The second topic is duller
  - 2.1. The first subtopic is silly
  - 2.2. The second subtopic is stupid
3. The third topic is the dullest

For other options to change the formatting of lists see the documentation on the **enumitem** package on CTAN.

## 3.5 Equations and a title with math $\sigma$

The most famous equation in the world (as an in-line equation):  $E^2 = (m_0c^2)^2 + (pc)^2$ , which is known as the **energy-mass-momentum** relation. Now for another equation.

$$CIF : \quad F_0^j(a) = \frac{1}{2\pi i} \oint_{\gamma} \frac{F_0^j(z)}{z-a} dz \quad (3.1)$$

Followed by another in-line random mapping equation  $f : \mathcal{X} \mapsto \mathcal{Z}$  to end the equations bit.

### 3.6 SI units example

The SI Units for dynamic viscosity is  $\text{Ns m}^{-2}$ . The SI Unit for electrical resistance is  $\Omega$ .

### 3.7 An image

Now I'm going to randomly include a picture, Figure 3.1.

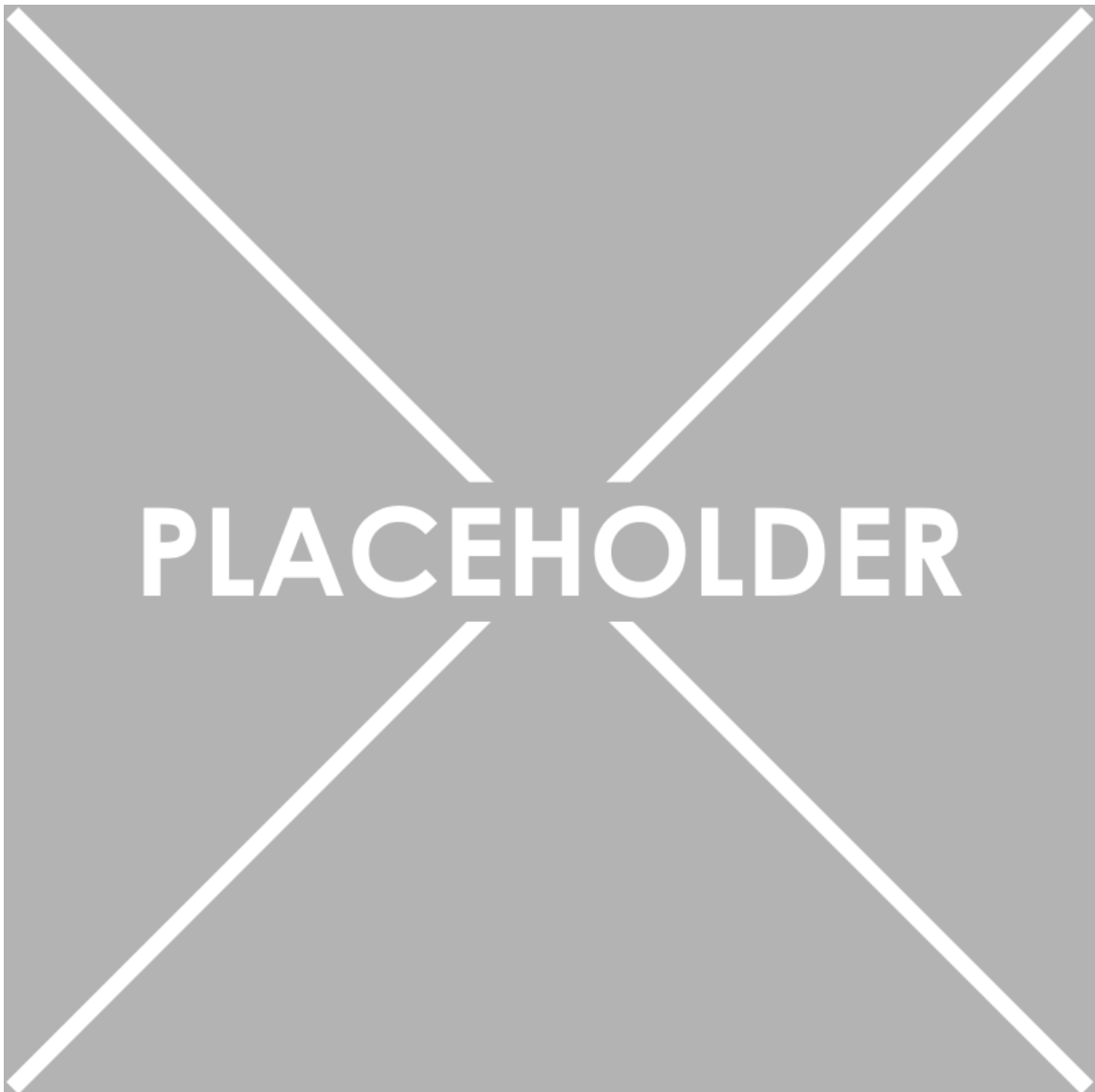


Fig. 3.1 This is just a long figure caption for the Public Domain placeholder graphic from [openclipart.org](http://openclipart.org)

## 3.8 Source code or text file listing

How about a program listing using *verbatim*.

```
#include <stdio.h>

main( )
{
    printf("hello, world\n");
}
```

### 3.8.1 Listings example

Alternatively the HTML code below uses the *Listings* package, good for source code and other text listings, see the documentation for Listings on CTAN, or <http://texdoc.net/texmf-dist/doc/latex/listings/listings.pdf> to learn about Listings.

Listing 3.1 Hello World in HTML

```
<!DOCTYPE html>
<html>
  <head>
    <title>Basic Web Page</title>
  </head>
  <body>
Hello World!
  </body>
</html>
```

### 3.8.2 Pseudo code example

What about some pseudo code using the *algorithm2e* package.

---

**Algorithm 1:** How to write algorithms

---

```

Data: this text
Result: how to write algorithm with LATEX2ε
initialization;
while not at end of this document do
  | read current;
  | if understand then
  | | go to next section;
  | | current section becomes this one;
  | else
  | | go back to the beginning of current section;
  | end
end

```

---

See <http://tug.ctan.org/macros/latex/contrib/algorithm2e/doc/algorithm2e.pdf> for details and options.

## 3.9 Hidden section

(This section will not be listed in the table of contents.)

Lorem ipsum dolor sit amet, consectetur adipiscing elit. In magna nisi, aliquam id blandit id, congue ac est. Fusce porta consequat leo. Proin feugiat at felis vel consectetur. Ut tempus ipsum sit amet congue posuere. Nulla varius rutrum quam. Donec sed purus luctus, faucibus velit id, ultrices sapien. Cras diam purus, tincidunt eget tristique ut, egestas quis nulla. Curabitur vel iaculis lectus. Nunc nulla urna, ultrices et eleifend in, accumsan ut erat. In ut ante leo. Aenean a lacinia nisl, sit amet ullamcorper dolor. Maecenas blandit, tortor ut scelerisque congue, velit diam volutpat metus, sed vestibulum eros justo ut nulla. Etiam nec ipsum non enim luctus porta in in massa. Cras arcu urna, malesuada ut tellus ut, pellentesque mollis risus. Morbi vel tortor imperdiet arcu auctor mattis sit amet eu nisi. Nulla gravida urna vel nisl egestas varius. Aliquam posuere ante quis malesuada dignissim. Mauris ultrices tristique eros, a dignissim nisl iaculis nec. Praesent dapibus tincidunt mauris nec tempor. Curabitur et consequat nisi. Quisque viverra egestas risus, ut sodales enim blandit at. Mauris

quis odio nulla. Cras euismod turpis magna, in facilisis diam congue non. Mauris faucibus nisl a orci dictum, et tempus mi cursus.

### **3.10 Other options**

Read the comments in the *preamble.tex* file to see other features, for example adding to-do notes, with or without text highlighting.



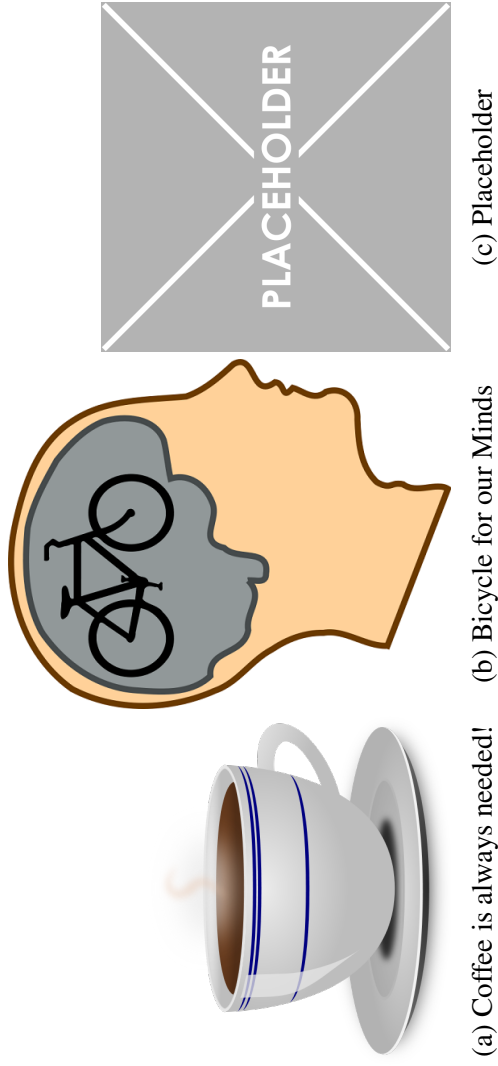


Fig. 3.2 My graphics

### Subplots

I can cite Bicycle for our Minds (see Fig. 3.2b) and others, e.g. a Placeholder graphic (Fig. 3.2c) or I can cite the whole figure as Fig. 3.2



# Chapter 4

## My fourth chapter

### 4.1 First section of the fourth chapter

And now I begin my fourth chapter here ...

And now to cite some more people Read (1985); Ancey et al. (1996)

#### 4.1.1 First subsection in the first section

... and some more

#### 4.1.2 Second subsection in the first section

... and some more ...

##### First subsub section in the second subsection

... and some more in the first subsub section otherwise it all looks the same doesn't it? well we can add some text to it ...

#### 4.1.3 Third subsection in the first section

... and some more ...

##### First subsub section in the third subsection

... and some more in the first subsub section otherwise it all looks the same doesn't it? well we can add some text to it and some more and some more and some more and some more and some more and some more and some more ...

### Second subsub section in the third subsection

... and some more in the first subsub section otherwise it all looks the same doesn't it? well we can add some text to it ...

## 4.2 Second section of the third chapter

and here I write more ...

## 4.3 The layout of formal tables

This section has been modified from *Publication quality tables in L<sup>A</sup>T<sub>E</sub>X\** by Simon Fear.

The layout of a table has been established over centuries of experience and should only be altered in extraordinary circumstances.

When formatting a table, remember two simple guidelines at all times:

1. Never, ever use vertical rules (lines).
2. Never use double rules.

These guidelines may seem extreme but I have never found a good argument in favour of breaking them. For example, if you feel that the information in the left half of a table is so different from that on the right that it needs to be separated by a vertical line, then you should use two tables instead. Not everyone follows the second guideline:

There are three further guidelines worth mentioning here as they are generally not known outside the circle of professional typesetters and subeditors:

3. Put the units in the column heading (not in the body of the table).
4. Always precede a decimal point by a digit; thus 0.1 *not* just .1.
5. Do not use 'ditto' signs or any other such convention to repeat a previous value. In many circumstances a blank will serve just as well. If it won't, then repeat the value.

A frequently seen mistake is to use `\begin{center}` ... `\end{center}` inside a figure or table environment. This center environment can cause additional vertical space. If you want to avoid that just use `\centering`

Table 4.1 A badly formatted table

Dental measurement	Species I		Species II	
	mean	SD	mean	SD
I1MD	6.23	0.91	5.2	0.7
I1LL	7.48	0.56	8.7	0.71
I2MD	3.99	0.63	4.22	0.54
I2LL	6.81	0.02	6.66	0.01
CMD	13.47	0.09	10.55	0.05
CBL	11.88	0.05	13.11	0.04

Table 4.2 A nice looking table

Dental measurement	Species I		Species II	
	mean	SD	mean	SD
I1MD	6.23	0.91	5.2	0.7
I1LL	7.48	0.56	8.7	0.71
I2MD	3.99	0.63	4.22	0.54
I2LL	6.81	0.02	6.66	0.01
CMD	13.47	0.09	10.55	0.05
CBL	11.88	0.05	13.11	0.04

Table 4.3 Even better looking table using booktabs

Dental measurement	Species I		Species II	
	mean	SD	mean	SD
I1MD	6.23	0.91	5.2	0.7
I1LL	7.48	0.56	8.7	0.71
I2MD	3.99	0.63	4.22	0.54
I2LL	6.81	0.02	6.66	0.01
CMD	13.47	0.09	10.55	0.05
CBL	11.88	0.05	13.11	0.04



# Bibliography

- Abramovich, Y. A., Aliprantis, C. D., and Burkinshaw, O. (1995). Another characterization of the invariant subspace problem. *Operator Theory in Function Spaces and Banach Lattices. The A.C. Zaanen Anniversary Volume, Operator Theory: Advances and Applications*, 75:15–31. Birkhäuser Verlag.
- Ancey, C., Coussot, P., and Evesque, P. (1996). Examination of the possibility of a fluid-mechanics treatment of dense granular flows. *Mechanics of Cohesive-frictional Materials*, 1(4):385–403.
- Aupetit, B. (1991). *A Primer on Spectral Theory*. Springer-Verlag, New York.
- Conway, J. B. (1990). *A Course in Functional Analysis*. Springer-Verlag, New York, second edition.
- Ljubič, J. I. and Macaev, V. I. (1965). On operators with a separable spectrum. *Amer. Math. Soc. Transl. (2)*, 47:89–129.
- Read, C. J. (1985). A solution to the invariant subspace problem on the space  $l_1$ . *Bull. London Math. Soc.*, 17:305–317.





# Appendix A

## Further information

### General

This template should provide a good starting point for writing up a Coventry University Thesis. It has briefly covered writing  $\LaTeX$  in Overleaf and MiKTeX. There is plenty of help available for setting up a  $\LaTeX$  environment on a variety of operating systems and editing in  $\LaTeX$  from the Internet. The original CUED template provides further information on installing  $\LaTeX$  environments, see the Appendix in the *thesis.pdf* file at <https://github.com/kks32/phd-thesis-template>.

### Useful links

**Overview article** - [https://tekeye.uk/free\\_resources/thesis-template-in-latex-for-cu-phd](https://tekeye.uk/free_resources/thesis-template-in-latex-for-cu-phd)

**CULTT GitHub repository** - <https://github.com/GR8DAN/coventry-thesis>

**Learn with the Overleaf documentation** - <https://www.overleaf.com/learn/>

**Use MiKTeX for a PC  $\LaTeX$  environment** - <https://miktex.org/>

**$\LaTeX$  for beginners** - <http://www.docs.is.ed.ac.uk/skills/documents/3722/3722-2014.pdf>

**List of LaTeX symbols** - [http://www.rpi.edu/dept/arc/training/latex/LaTeX\\_symbols.pdf](http://www.rpi.edu/dept/arc/training/latex/LaTeX_symbols.pdf)

**The  $\LaTeX$  Project** - <https://www.latex-project.org/>

**Cambridge template** - <http://www-h.eng.cam.ac.uk/help/tpl/textprocessing/ThesisStyle/>

**classicthesis - An Alternative Thesis Template** - <http://www.miede.de/#classicthesis>

**Coventry University Academic Regulations** (for information on the thesis requirements)

- <http://www.coventry.ac.uk/life-on-campus/the-university/key-information/registry/academic-regulations/>

**The Coventry University Students Portal** (to access the thesis information provided by the Doctoral College) - <https://share.coventry.ac.uk/students>

**Coventry University's Centre for Academic Writing** (providing support for CU students)

- <https://cawbookings.coventry.ac.uk/>

**Coventry University's Harvard Referencing Guide** - <https://goo.gl/9jxdPX>

**Coventry University Ethics portal** - <https://ethics.coventry.ac.uk/>

## Appendix B

### This is another appendix

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Sed vitae laoreet lectus. Donec lacus quam, malesuada ut erat vel, consectetur eleifend tellus. Aliquam non feugiat lacus. Interdum et malesuada fames ac ante ipsum primis in faucibus. Quisque a dolor sit amet dui malesuada malesuada id ac metus. Phasellus posuere egestas mauris, sed porta arcu vulputate ut. Donec arcu erat, ultrices et nisl ut, ultricies facilisis urna. Quisque iaculis, lorem non maximus pretium, dui eros auctor quam, sed sodales libero felis vel orci. Aliquam neque nunc, elementum id accumsan eu, varius eu enim. Aliquam blandit ante et ligula tempor pharetra. Donec molestie porttitor commodo. Integer rutrum turpis ac erat tristique cursus. Sed venenatis urna vel tempus venenatis. Nam eu rhoncus eros, et condimentum elit. Quisque risus turpis, aliquam eget euismod id, gravida in odio. Nunc elementum nibh risus, ut faucibus mauris molestie eu.



# **Appendix C**

## **Ethics documentation**

The following page(s) contain the supporting document(s) for the ethics process, reference number PXXXXX.



## Research Ethics Approval

**NOTE: This single page example will be replaced with your full multi-page ethics PDF documentation taken from the University’s ethics system.**

Project Title

### Record of Approval

#### Principal Investigator

I <b>request an ethics peer review</b> and confirm that I have answered all relevant questions in this checklist honestly.	
I confirm that I will carry out the project in the ways described in this checklist. I will immediately suspend research and request new ethical approval if the project subsequently changes the information I have given in this checklist.	
I confirm that I, and all members of my research team (if any), have read and agreed to abide by the Code of Research Ethics issued by the relevant national learned society.	
I confirm that I, and all members of my research team (if any), have read and agreed to abide by the University’s Research Ethics, Governance and Integrity Framework.	

Name:..... Date: dd/mm/yyyy

#### Student’s Supervisor (if applicable)

I have read this checklist and confirm that it covers all the ethical issues raised by this project fully and frankly. I also confirm that these issues have been discussed with the student and will continue to be reviewed in the course of supervision.

Name:..... Date: dd/mm/yyyy

#### Reviewer (if applicable)

Date of approval by anonymous reviewer: dd/mm/yyyy

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