PhDthesis.cls – Oh no! Yet another LaTeX thesis class

Pete R Jones

MRC Institute of Hearing Research
School of Psychology
University of Nottingham

Thesis submitted to the University of Nottingham
for the degree of *Doctor of Philosophy*

2015

Thesis Abstract

This document is

For more information – find the instructions relating to the relevant package

Declaration

I declare that this thesis was composed by myself, that the work contained herein is my own except where explicitly stated otherwise in the text, and that this work has not been submitted for any other degree or professional qualification.

Pete R Jones *Date*

Acknowledgements

This work was supported by the UK Medical Research Council (Grant: U135097130).

Copyright Permissions

- Chapter 2 is adapted from a manuscript currently in submission (accepted pending revision)

  Smith, J., Smith, J., Smith, J., and Smith, J. (2010). A thousand monkeys on a thousand typewriters. *JASA*.

- Data from Chapter 3 was presented in:

  Jones, R., Jones, R., and Jones, R. (2011). A million monkeys on a thousand typewriters. *JASA*. *Poster presentation at BSA, Manchester*

Dedicated to that most special of persons.

Table of Contents

List of Figures

List of Tables

PART I

Example chapters

CHAPTER 1

Absurdly basic use

Hello world. The end.

CHAPTER 2

Basic Use

In this chapter we present a minimum working example of a fully-formatted thesis chapter. Most of the core fundamentals will be introduced. By the end of this chapter you should be well on your way to making your own thesis.

Writing text in LaTeXis quite simple. By using the appropriate commands, we can make the font style **bold**, *italic*, `typewritten`, SMALL CAP, 'things in quotes', "things in double quotes", hyphenate-things and so forth. We can cite previous studies, such as **?**, or any others you have saved in your bibtex file (e.g., **??**). As you will see in §2.1, we can also reference other parts of this document.

2.1 Graphics, tables and equations

2.1.1 A figure

An example figure is given In Fig 2.1.

Fig. 2.1: long title to accompany the figure. Note that since we didn't specify the file extension, the class will automatically search for an appropriate file with the stem 'exampleFigure'. If you are using the PdfLatex engine, it will search for .pdf or bitmap files (e.g., .png, .jpg). If you are using the Latex engine, it will search for vector files (e.g., .eps, .svg). The recommended approach is to use .pdf figures.

2.1.2 A table

An example table is given In Fig 2.1.

id	score	q-factor	y-factor	fraud-rate	notes
PJ	70.4	9	9	22.1	*highly questionable*
NJ	46.9	8	11	17.9	
CT	90.0	13	6	19.2	*exemplary*

Table 2.1: long title to accompany the table.

2.1.3 An equation

Numbered equations can be entered into Matlab thus:

$$c^2 = a^2 + b^2. \tag{2.1}$$

The equation environment was used to create Eq 2.1. We can also type maths inline, within the body of the text. This can be of useful, for example, when reporting statistics [$F_{(2,3)} = 4.2, p = .002, \eta_p^2 = 0.7$].

2.2 Conclusions

By editing this chapter you should now be able to:

(1) Insert text.

(2) Divide a chapter into separate sections

(3) Insert graphics, tables and equations

(4) Link to sections and graphics

(5) Add key components, such as abstracts and acknowledgments, appendices, etc.

Acknowledgements

This work was supported by the Medical Research Council, UK (Grant: U135097130).

CHAPTER 3

Advanced Use

In this chapter we present some slightly more complicated variations on the concepts given previously in Chapter 2. By the end of this chapter you should be able to do most of the things that you will ever require.

MANY useful time-saving commands are included. The simplest of these are a list of common abbreviations: e.g., i.e., etc., naïve, ©, d' , $\sim$; and their uppercase equivalents: I.e., E.g., etc. (see $\oint$5.5 file for full list). Also included are custom environments for margin notes, and named quotes:

EXAMPLE NOTE

> " *The meaning of a word is in its use* "
>
> (Me, just now)

Additional information can be placed in footnotes, such as this[1], or in an endnote, like this[1]. The endnotes will appear where-ever the user includes the `\theendnotes` command (usually towards the end of the chapter). Bigger chunks of information can be placed in a thesis appendex (e.g., Appendix **??**), which appears at the end of the document, or in a chapter appendix (e.g., Appendix 3.B). Glossary symbols can be referred to, thus: τ. The name of the glossary term can also be referred to, thus: example term. Once a term has been referenced it will appear in the nomenclature at the start of the document, which will automatically be linked-to. Edit `_glossary/glossary.tex` to add/remove/modify entries.

3.1 Graphics, tables and equations

3.1.1 Advanced figures

often we want to place figures side-by-side. As demonstrated in Fig 3.1, this can be achieved using the `subfloatrow` environment. If you prefer, you can replace this with similar packages such as `subfig` or `subfigure`. However, `subfloatrow`, appears more flexible (albeit a bit more tricky to get the hang of).

[1] An example footnote

(a) **(b)**

Fig. 3.1: An example side-by-side figure. Arranged using `subfloatrow`.

Some users may also want to use LaTeX's graphics engine to draw diagrams programmatically. For example, Fig 3.2 was generated at run-time from the commands stored in `tikz_example.tex`.

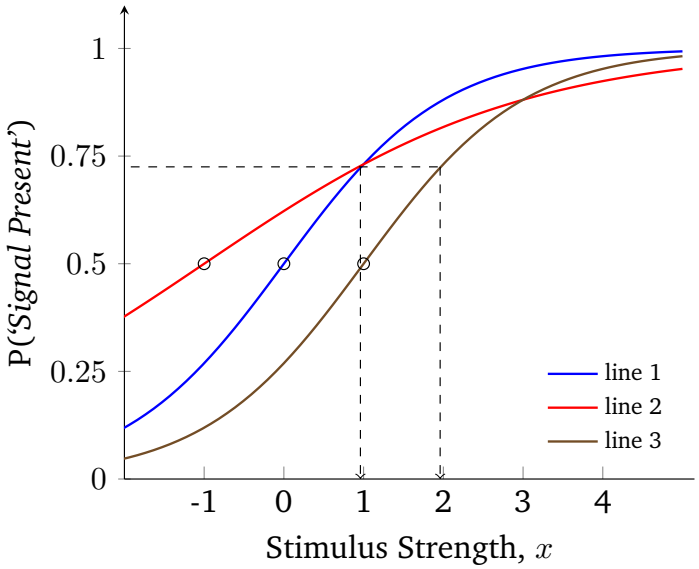

Fig. 3.2: An example tikz figure. Generated at runtime from `tikz/tikz_example.tex`.

3.1.2 Advanced tables

A number of table formatting packages are included (multirow, longtable, colortbl, booktabs, threeparttable, tabularx). Using these, it is possible to create quite complex tables:

Listener	Analysis 1[a]			Analysis 2		
	F	p	η_p^2	F	p	η_p^2
L1	1.2	.001	0.7	0.9	.041	0.3
L2	3.3	.001	0.7	0.9	.041	0.3
L3	4.1	.001	0.7	0.9	.041	0.3
L4	5.6	.001[b]	0.7	0.9	.041	0.3
L7	2.3	.001	0.7	0.9	.041	0.3
L8	1.7	.001	0.7	0.9	.041	0.3
L9	7.9	.001	0.7	0.9	.041	0.3

[a] See also **?**

[b] Example footnote II

Table 3.1: An example complex table. Its width adjusts to fit the page width. It includes footnotes, colour elements, and cells spanning multiple rows and/or columns.

Using `kbordermatrix` it is also easy to generate matrices, thus:

indices	(1·11)	(1·12)	(1·22)	(2·11)	(2·12)	(2·22)
(1)	$\lambda(1)^2$	$2\lambda(1)\lambda(2)$	$\lambda(2)^2$	0	0	0
3(2)	0	0	0	$\lambda(1)^2$	$2\lambda(1)\lambda(2)$	$\lambda(2)^2$
(111)	3	0	0	0	0	0
(112)	0	2	0	1	0	0
(122)	0	0	1	0	2	0
(222)	0	0	0	0	0	3

3.1.3 Advanced equations

Multi-line equations can be aligned on a common point, such as the equals sign, and text can be placed between rows. For example:

$$E[|X|] = \int_x |x| f_X(x) dx \tag{3.1a}$$

It is thus trivial that:

$$= \int_{|x|\geq a} |x| f_X(x) dx + \int_{|x|<a} |x| f_X(x) dx \tag{3.1b}$$

$$\geq \int_{|x|\geq a} |x| f_X(x) dx \tag{3.1c}$$

Recalling what we learnt earlier:

$$\geq a \int_{|x| \geq a} f_X(x) dx \tag{3.1d}$$

$$= aE[|X| \geq a] \tag{3.1e}$$

Now if we add a pinch of salt:

$$\therefore \qquad E[|X| \geq a] \leq \frac{E[|X|]}{a} \tag{3.1f}$$

3.1.4 Code listing

Sometimes you may want to include excerpts of code. This can be done either by typing the code directly into the file:

```
for a=1:5
  b(a) = a*2
  c = sum(b)

  if(c > 15)
      disp('c is big')
  end
end
```

Or by importing the code from a file

```
clear all, close all

for x = 1:20
    fprintf('%i times 2 = %i\n',x,x*2)
end
```

code/exampleCode.m

3.2 Conclusions

In this chapter we have:

(1) Use various text commands

(2) Add chapter appendices

(3) Arrange figures

(4) Customise tables

(5) Align equations

(6) Include code listings

Notes

[1] An example endnote

Acknowledgements

This work was supported by the Medical Research Council, UK (Grant: U135097130).

Chapter Appendices

3.A An example appendix

Here is an example chapter appendix. Further appendices can be placed at the end of the thesis, but sometimes it is nice to have appendices within the chapter itself. Each chapter appendix appears on a new page.

3.B Another example appendix

This is another appendix.

PART II

Command list

CHAPTER 4

Odds and ends

In this chapter we introduce some extra things that we couldn't fit in elsewhere. Experimenting with some of the things covered here will require going into the .cls source-file.

4.1 The font

The standard font is Bitstream-Charter. It is a bit strong/nicer than the standard modern. It has a fairly comprehensive set of mathmatical symbols, and can be scaled (e.g., for use with dropcaps). The font can be changed by editing line in the .cls that reads: `\renewcommand{\familydefault}{bch}`

4.2 Filler text

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.

4.3 Comments

It is somtimes nice to be able too flag up errors for corection. This can be done useing the `fixme` package, witch allows you to write comments that appear in the margin. This paragraph contains a numbr of such comments. Can't see them? They are suppresed in final mode. Try running `example_thesis_v1.tex` again, but this time using: `\documentclass[isdraft, oneside, logo]{ihrthesis}`

4.4 General tips

Check the .log file for useful warnings, such as those concerning undefined references and citations.

Acknowledgements

This work was supported by the Medical Research Council, UK (Grant: U135097130).

CHAPTER 5

Commands

In this chapter the commands included in `ihrthesis.cls` *are detailed. The best way to find out about all of these, and to find additional commands, is to look inside the .cls file.*

5.1 Package flags

5.1.1 Common invocations

Draft version:

```
\documentclass[isdraft]{ihrthesis}
```

Softbound version:

```
\documentclass[oneside]{ihrthesis}
```

Hardbound version:

```
\documentclass{ihrthesis}
```

Misc example:

```
\documentclass[twoside, listsintoc, parskip]{ihrthesis}
```

5.1.2 List of flags

`isdraft`	condense [single-spaced, no blank page] with additional markups [line numbers, comments]
`oneside/twoside`	specify a one-sided or two-sided page layouts
`singlespacing/fullspacing/ doublespacing`	amount of vertical line spacing
`sansheadings/normalheadings`	headings and captions in sans-serif (default) or in the same font as the rest of the thesis

`ragged`	make right-hand margin tastefully ragged
`logo`	put a logo onto the title page
`10pt/11pt/12pt`	choose a font size
`centrechapter/leftchapter/rightchapter`	alignment of chapter headings
`listsintoc`	put list of figures/tables in table of contents (default: not)
`romanprepages/plainprepages`	number the preliminary pages with Roman numerals (default) or consecutively with the rest of the thesis
`parskip`	don't indent paragraphs, put a blank line between instead
`abbrevs`	define a list of useful abbreviations (see documentation) (default: on)
`draft`	supress images and mark overfull hboxes
`watermark`	add a 'private' watermark to every page

5.2 Main doc commands

See `example_thesis_1.tex`

5.3 Public environments and commands

`chapabstract`	`\begin{chapabstract}`
	` YOUR TEXT`
	`\end{chapabstract}`

`quotetext`	`\begin{quotetext}{AUTHOR}`
	` YOUR TEXT`
	`\end{quotetext}`

`marginnote`	`\marginnote{YOUR TEXT}`
`endnote`	`\endnote{YOUR TEXT}` followed somewhere by: `\theendnotes`

`lstinputlisting`	`\begin{lstlisting}`
	` YOUR TEXT`
	`\end{lstlisting}`

lstlisting	`\lstinputlisting[language=matlab]{FILENAME}`

chapacknowledgements	`\begin{chapacknowledgements}`
	`YOUR TEXT`
	`\end{chapacknowledgements}`

mathlist[1]	`mathlist{x,y,z}`
url	`\url{YOUR TEXT}`
superscript	`\superscript{YOUR TEXT}`

5.4 Protected commands

The following are also used within the thesis class, but are unlikely to be required elsewhere.

refstyle	`refstyle`
ChapterOutsidePart	`ChapterOutsidePart`

5.5 Abbreviations

\ns	n.s.
\cf	cf.
\NB	N.B.
\nb	n.b.
\eg	e.g.,
\Eg	E.g.,
\ie	i.e.,
\Ie	I.e.,
\etc	etc.
\etal	*et al*.
\etseq	*et seq*.
\precis	précis
\Precis	Précis
\role	rôle
\Role	Rôle
\naive	naïve
\Naive	Naïve
\cpright	©
\degrees	°

[1] Untested / Possibly-buggy

`\iid`	i.i.d.
`\dprime`	d'
`\about`	$\sim$
`\tickmark`	✓
`\crossmark`	✗
`\yo`	y.o.
`\yos`	years old
`\th`	$^{\text{th}}$
`\st`	$^{\text{st}}$
`\nd`	$^{\text{nd}}$
`\th`	$^{\text{th}}$
`\rd`	$^{\text{rd}}$
`\fref{TEXT}`	Fig **??**
`\tref{TEXT}`	Table **??**
`\eref{TEXT}`	Eq **??**
`\cref{TEXT}`	Chapter **??**
`\sref{TEXT}`	$\oint$**??**
`\aref{TEXT}`	Appendix **??**
`\Fref{TEXT}`	Figure **??**
`\Tref{TEXT}`	Table **??**
`\Eref{TEXT}`	Equation **??**
`\Cref{TEXT}`	Chapter **??**
`\Sref{TEXT}`	Section **??**
`\Aref{TEXT}`	Appendix **??**

APPENDIX A

Supplementary Info I

All participants were asked the following dreadful questions. Answers are given in Appendix B.

Q1: What gets wetter and wetter the more it dries?

Q2: You throw away the outside and cook the inside. Then you eat the outside and throw away the inside. What did you eat?

Q3: What can you catch but not throw?

Q4: I have holes in my top and bottom, my left and right, and in the middle. But I still hold water. What am I?

Q5: The man who invented it doesn't want it. The man who bought it doesn't need it. The man who needs it doesn't know it. What is it?

APPENDIX B

Supplementary Info II

With apologies:

A1: A towel

A2: An ear of corn

A3: A cold

A4: A sponge

A5: A coffin