

THE UMALAYATHESIS L^AT_EX DOCUMENT CLASS

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INSTITUTE OF POSTGRADUATE STUDIES
UNIVERSITY OF MALAYA
KUALA LUMPUR

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THESIS SUBMITTED IN FULFILMENT OF THE
REQUIREMENTS FOR THE DEGREE OF DOCTOR
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UNIVERSITY OF MALAYA
KUALA LUMPUR

2016

UNIVERSITI MALAYA

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ABSTRACT

This is about my wonderful research.

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.

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ABSTRAK

Ini merupakan abstrak dalam Bahasa Melayu.

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ACKNOWLEDGEMENTS

Thanks guys. I owe you many.

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LIST OF SYMBOLS AND ABBREVIATIONS

- θ : temperature degree.
LI : lexical item.
NLP : Natural Language Processing.
POS : part of speech.

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CHAPTER 1: HOW TO USE UMALAYATHESIS TO WRITE YOUR THESIS

umalayathesis is a L^AT_EX class for authoring theses that fulfil formatting specifications required by Universiti Malaya (UM), Malaysia. The thesis preparation guide can be accessed at <http://goo.gl/28VWj>.

1.1 Files

Here's a quick list of the files required when writing your thesis with the umalayathesis class. Easiest way to go about things is to put all the files in the same directory. (See Chapter 1.3 for more details.)

- **umalayathesis.cls**, the L^AT_EX class file implementing the UM thesis formatting requirements.
- A “main driver” .tex file of your thesis, analogous to `int main()` or `public static void main(St`. You can name this file anything you like; it is known as `thesis.tex` in this guide. (See 1.3.)
- A .tex file containing your thesis abstract. (See 1.3.5.)
- .tex files containing your thesis chapters and appendices, one chapter per file. (See 1.3.7 and 1.3.8.)
- A .bib file containing your references and publications. (See 1.3.9).
- A .tex file containing your glossary. (See 1.3.11).

1.2 Printing from Acrobat Reader

Remember to set the **paper size** to **A4** and **page scaling** to **None** in the Print dialog, otherwise the margins would be incorrect.

1.3 Using the umalayathesis Class

1.3.1 Activation

To ‘activate’ the class, make sure your main document file (e.g. thesis.tex) starts off with

```
\documentclass{umalayathesis}:
```

```
\documentclass{umalayathesis}  
\usepackage{graphicx}  
\usepackage{... other packages you need}
```

This will set up the page margins, paragraph spacing, indents, page numbers, font face and size, citation and bibliography format, amongst other things.

1.3.2 Author Information

You need to provide some author information in the preamble. Example lines from thesis.tex:

```
\author{Lim Lian Tze}  
\title{My Ground-breaking Research}  
\submissionyear{2012}  
\degree{Doctor of Philosophy}
```

These information are needed to generate the preliminary pages.

1.3.3 Preliminary Pages

Once in the main document body, \frontmatter sets up the, well, front matter. This include setting the page numbers to lower-case Roman numerals.

umalayathesis can generate the cover page, title page and original literary work declaration page with the following lines (included in thesis.tex):

```
\makecoverandtitlepage  
\declarationpage
```

1.3.4 Acknowledgements

This is provided using `\acknowledgements`:

```
\acknowledgements{I would like to thank my parents, my family, my supervisor...}
```

1.3.5 Abstract

Write your abstracts in separate files (`sample-abstract.tex` for the English abstract and `sample-msabstract.tex` for the Malay abstract in this example), and include them in `thesis.tex` like this:

```
\abstractfromfile{sample-abstract}  
\msabstractfromfile{sample-msabstract}
```

1.3.6 Table of contents, List of figures and tables

These are auto-generated by the following lines (included in `thesis.tex`):

```
{\clearpage\SingleSpacing  
\tableofcontents\clearpage  
\listoffigures\clearpage  
\listoftables\clearpage}
```

1.3.7 Main Chapters

I highly recommend that each chapter be written in a separate file. For example, `chap-intro.tex` has the contents

```
\chapter{Introduction}  
This is the introduction chapter.  
  
\section{Problem Background}  
We study the...
```

And `chap-litreview.tex`:

```
\chapter{Literature Review}
We review the state of the art in...

\section{Early Approach}
Researchers first attempted to...
```

In thesis.tex, these chapter files are included with the following lines:

```
\mainmatter           % signal start of main chapters
\input{chap-intro}    % no .tex extension!
\input{chap-litreview}
\input{...}
```

1.3.8 Appendices

Again, I recommend keeping each appendix chapter in its own file e.g. app-umldiagram.tex:

```
\chapter{UML Diagrams}
...
```

And in thesis.tex:

```
\appendix % signal start of appendices
\input{app-umldiagram}
\input{...}
```

1.3.9 Citations and Bibliography

umalayathesis uses the apacite package to format citations and bibliography in the APA style. Here are some useful variants of the \cite command; see the apacite manual for full list.

- \cite{Lim:2009} → (Lim, 2009)
- \citeNP{Lim:2009} → Lim, 2009 (no parenthesis)
- \cite<see>[p.~7]{Lim:2009} → (see Lim, 2009, p. 7)
- \citeauthor{Lim:2009} → Lim
- \citeyear{Lim:2009} → (2009)

In thesis.tex, these lines will print the bibliography list:

```
\backmatter           % signal start of back matter
\bibliography{bibfile} % bibliography file name without .bib extension
```

1.3.10 List of Publications

First, make sure that you enter details about your own publications in your .bib file. Then in thesis.tex, search for the following line:

```
\nociteown{Lim:2009}
```

Replace the BibTeX key between the curly braces with that of your own publication.

If you have more than one publications, simply separate them with commas inside the curly braces, like this:

```
\nociteown{lim:tang:2004,Lim:2009}
```

1.3.11 Glossary

You can maintain a consistent glossary and acronym list using the glossaries package. It also supports acronym expansion on first mention!

First, define your acronyms and terms in a separate file e.g. myacronyms.tex:

```
% \newglossaryentry{label}{name={term},description={explanation}}
\newglossaryentry{lexicon}{
name={lexicon},
description={The vocabulary of a language, including its words and
expressions. More formally, it is a language's inventory of lexemes}
}

% \newacronym[description={explanation}]{label}{abbrv}{full form}
\newacronym
[description={single word or words that are grouped in a language's lexicon
}]
{LI}{LI}{lexical item}

\newacronym[description={The application of computational linguistics
principles to problems}]
```

```
{NLP}{NLP}{Natural Language Processing}
```

```
% when the plural form is irregular, specify firstplural and plural  
\newacronym  
[firstplural={parts of speech}, plural={POS},  
description={linguistic category of lexical items}]  
{POS}{POS}{part of speech}
```

Loading the glossary and acronym list, and later printing the list of acronyms and glossary in thesis.tex:

```
% Must be loaded BEFORE \begin{document}!  
\loadglsentries{myacronyms}  
\begin{document}  
...  
% List of acronyms is between list of tables and list of appendices  
\listofacronyms\clearpage  
...  
\bibliography{bibfile}  
% Glossaries is placed AFTER the bibliography  
% (only entries that are actually used in the text will be listed)  
\printglossary  
...
```

To mention them in the text (i.e. chap-xxx.tex etc):

```
Let's talk about \acp{LI} and \acp{POS} in \ac{NLP}. I mention again \acp{LI}. We will also talk about \glsplural{lexicon}.
```

Notice how the acronyms are expanded on first use, as well as the use of \glsplural and \acp for plurals:

```
Let's talk about lexical items (LIs) and parts of speech (POS) in Natural Language Processing (NLP). I mention again LIs. We will also talk about lexicons.
```

You will need to run pdflatex, the MakeGlossaries and MakeAcronyms tool that you configured earlier, then 2 more runs of pdflatex for the glossaries to appear properly.

Use \Gls, \Glsplural, \Ac, \Acp etc. if you need to capitalise the first letter of your terms at the beginning of sentences.

CHAPTER 2: INTRODUCTION, BACKGROUND STORY, MOTIVATIONS

2.1 First Test and I need a really long title, please do oblige me won't you? Just a few more words and yes we're there

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. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

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.

2.1.1 Second Test

Their (Audibert, 2004) requirements¹ are really amazing² (Budanitsky & Hirst, 2006).

¹See here, how weird, how to fill out an entire line. See here, how weird, how to fill out an entire line. See here, how weird, how to fill out an entire line. See here, how weird, how to fill out an entire line. See here, how weird, how to fill out an entire line.

²don't you agree?



Figure 2.1: First figure. OK?



Figure 2.2: Second figure. Now I need a long caption to test out how things look in the List of Figures. Is this long enough yet? Is it? Is it?

How how?

2.1.1.1 This works?

Does it? Great. Let's talk about lexical items (LIs) and parts of speech (POS) in Natural Language Processing (NLP). I mention again LIs. Oh I have a symbol too, it's temperature degree (θ). And I talk a lot about lexicons.

2.2 Yeah

Fusce mauris. Vestibulum luctus nibh at lectus. Sed bibendum, nulla a faucibus semper, leo velit ultricies tellus, ac venenatis arcu wisi vel nisl. Vestibulum diam. Aliquam pellentesque, augue quis sagittis posuere, turpis lacus congue quam, in hendrerit risus eros eget felis. Maecenas eget erat in sapien mattis porttitor. Vestibulum porttitor. Nulla facilisi. Sed a turpis eu lacus commodo facilisis. Morbi fringilla, wisi in dignissim

interdum, justo lectus sagittis dui, et vehicula libero dui cursus dui. Mauris tempor ligula sed lacus. Duis cursus enim ut augue. Cras ac magna. Cras nulla. Nulla egestas. Curabitur a leo. Quisque egestas wisi eget nunc. Nam feugiat lacus vel est. Curabitur consectetuer.

Table 2.1: This is a table

Hey	How's it	Going?
Fine!	Just great.	See ya!
Fine!	Just great.	See ya!

Sed commodo posuere pede. Mauris ut est. Ut quis purus. Sed ac odio. Sed vehicula hendrerit sem. Duis non odio. Morbi ut dui. Sed accumsan risus eget odio. In hac habitasse platea dictumst. Pellentesque non elit. Fusce sed justo eu urna porta tincidunt. Mauris felis odio, sollicitudin sed, volutpat a, ornare ac, erat. Morbi quis dolor. Donec pellentesque, erat ac sagittis semper, nunc dui lobortis purus, quis congue purus metus ultricies tellus. Proin et quam. Class aptent taciti sociosqu ad litora torquent per conubia nostra, per inceptos hymenaeos. Praesent sapien turpis, fermentum vel, eleifend faucibus, vehicula eu, lacus.

Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Donec odio elit, dictum in, hendrerit sit amet, egestas sed, leo. Praesent feugiat sapien aliquet odio. Integer vitae justo. Aliquam vestibulum fringilla lorem. Sed neque lectus, consectetuer at, consectetuer sed, eleifend ac, lectus. Nulla facilisi. Pellentesque eget lectus. Proin eu metus. Sed porttitor. In hac habitasse platea dictumst. Suspendisse eu lectus. Ut mi mi, lacinia sit amet, placerat et, mollis vitae, dui. Sed ante tellus, tristique ut, iaculis eu, malesuada ac, dui. Mauris nibh leo, facilisis non, adipiscing quis, ultrices a, dui.

Morbi luctus, wisi viverra faucibus pretium, nibh est placerat odio, nec commodo wisi enim eget quam. Quisque libero justo, consectetuer a, feugiat vitae, porttitor eu,

libero. Suspendisse sed mauris vitae elit sollicitudin malesuada. Maecenas ultricies eros sit amet ante. Ut venenatis velit. Maecenas sed mi eget dui varius euismod. Phasellus aliquet volutpat odio. Vestibulum ante ipsum primis in faucibus orci luctus et ultrices posuere cubilia Curae; Pellentesque sit amet pede ac sem eleifend consectetur. Nullam elementum, urna vel imperdiet sodales, elit ipsum pharetra ligula, ac pretium ante justo a nulla. Curabitur tristique arcu eu metus. Vestibulum lectus. Proin mauris. Proin eu nunc eu urna hendrerit faucibus. Aliquam auctor, pede consequat laoreet varius, eros tellus scelerisque quam, pellentesque hendrerit ipsum dolor sed augue. Nulla nec lacus.

Suspendisse vitae elit. Aliquam arcu neque, ornare in, ullamcorper quis, commodo eu, libero. Fusce sagittis erat at erat tristique mollis. Maecenas sapien libero, molestie et, lobortis in, sodales eget, dui. Morbi ultrices rutrum lorem. Nam elementum ullamcorper leo. Morbi dui. Aliquam sagittis. Nunc placerat. Pellentesque tristique sodales est. Maecenas imperdiet lacinia velit. Cras non urna. Morbi eros pede, suscipit ac, varius vel, egestas non, eros. Praesent malesuada, diam id pretium elementum, eros sem dictum tortor, vel consectetur odio sem sed wisi.

Sed feugiat. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Ut pellentesque augue sed urna. Vestibulum diam eros, fringilla et, consectetur eu, nonummy id, sapien. Nullam at lectus. In sagittis ultrices mauris. Curabitur malesuada erat sit amet massa. Fusce blandit. Aliquam erat volutpat. Aliquam euismod. Aenean vel lectus. Nunc imperdiet justo nec dolor.

Etiam euismod. Fusce facilisis lacinia dui. Suspendisse potenti. In mi erat, cursus id, nonummy sed, ullamcorper eget, sapien. Praesent pretium, magna in eleifend egestas, pede pede pretium lorem, quis consectetur tortor sapien facilisis magna. Mauris quis magna varius nulla scelerisque imperdiet. Aliquam non quam. Aliquam porttitor quam a lacus. Praesent vel arcu ut tortor cursus volutpat. In vitae pede quis diam bibendum

placemat. Fusce elementum convallis neque. Sed dolor orci, scelerisque ac, dapibus nec,
ultrices ut, mi. Duis nec dui quis leo sagittis commodo.

CHAPTER 3: DUMMY CHAPTER

Hello!!

Test 3

Figure 3.1: Let's see. What have we got here?

REFERENCES

- Audibert, L. (2004). Word sense disambiguation criteria: a systematic study. In *20th International Conference on Computational Linguistics (COLING 2004)* (pp. 910–916). Geneva, Switzerland: COLING.
- Budanitsky, A., & Hirst, G. (2006). Evaluating WordNet-based measures of lexical semantic relatedness. *Computational Linguistics*, 32(1), 13–47.

LIST OF PUBLICATIONS AND PAPERS PRESENTED

Lim, L. T. (2009). Multilingual lexicons for machine translation. In *Proceedings of the 11th International Conference on Information Integration and Web-based Applications & Services (iiWAS2009) Master and Doctoral Colloquium (MDC)* (pp. 732–736). Kuala Lumpur, Malaysia.

**APPENDIX A: MANUALS, TECHNICAL SPECIFICATIONS,
DOCUMENTATIONS, EXAMPLE SCENARIOS**

APPENDIX B: TRY

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. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

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.