UNSW
AUSTRALIA

School of Computer Science and Engineering

Faculty of Engineering

The University of New South Wales

Requirements to theses submitted in the Faculty of Engineering

Thesis submitted as a requirement for the degree of

Bachelor of Engineering

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Abstract

More and more educational institutions depend on online learning management systems for distributing resources to students, which has been accelerated by the coronavirus pandemic, and so there are a huge number of learning management systems available. These systems have a wide variety of features such as quizzes, blogs, assessment management, integrations with third party platforms such as Zoom and TurnItIn, and more.

However, many of these systems do not have an efficient or useful way to reuse content and resources used in other courses. Time is wasted organising and uploading content for students. Many of these learning management systems are also difficult to use for both teachers and students and are missing key features such as forums and teachers may look to other platforms such as Piazza for these features in conjunction with the learning management system.

Therefore, we will implement a learning management system with an improved UI that is more accessible and easier to use for both teachers and students, and adopts a system where teachers can upload content to a specific topic. This topic then can be reused for other courses, allowing for easier course creation and management.

Acknowledgements

The authors of this thesis would like to extend their deepest gratitude to Professor Maurice Pagnucco for supervision, support and assistance to this thesis, and Dr John Shepherd for his feedback and suggestions as well.

(Expand acknowledgements in the future)

Abbreviations

BE Bachelor of Engineering

UNSW University of New South Wales

LMS Learning Management System

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Chapter 1

Introduction

Having a set of clear requirements to their thesis is important to student finalising their BE, or other, degree. Such requirements are both in relation to the physical appearance of the thesis, as well as the writing style and organisation. The present document tries to concisely state the theses requirements while appearing in layout and structure as a thesis itself.

Chapter 2 explains the background for this document. Chapter 3 states the style and submission related requirements to theses submitted at the school. Chapter 4 explains content related requirements to theses. Chapter 5 evaluates the thesis requirements template. Finally, Chapter 6 draws up conclusions and suggest ways to further improve the thesis requirements template.

Chapter 2

Background

2.1 Comparison table

Categories	Canvas	WebCMS	Moodle	D2L Brightspace	OpenLearning	Edmodo	Google Classroom
Topic Tree					No		
Account					Yes		
Course Pages					Yes		
Assignments					Yes		
Dashboard					No		
Quizzes/Exams/Tests/Polls					Yes		
Forums					No (comments system only)		
Multiplatform Access					Yes		
Accessibility					Yes		
Grading					Yes		
Attendance					No		
Calendar					Yes		
Enrolment					Yes		
Blogs/Wikis/Discussions					Yes		
Notifications					Yes		
Lectures and Tutorials					Yes		
Third Party Integration					No (API is provided)		
Inbox/Messaging					Yes		
Gamification/Karma System					Yes		
High Quality User Interface					No		
Open Source					No		
Data Migration					No		
Performance (out of 10)					1		

Chapter 3

Style and Submission Requirements

Requirements for other parts of the thesis work can be found on the school web-pages [**?**]. The requirements below are for the written thesis only.

3.1 Format

The following format specifications must be adhered to for your thesis (the LaTeX template available from the school ensures this):

1. The thesis must be written on *A4 size paper*.
2. The thesis must be typed or prepared using a *word-processor*.
    - For Undergraduate theses, you are encouraged to use both sides of the paper.
    - For Higher Degree Research theses, your submitted thesis must be printed single-sided.
3. *Margins* on all sides must be no less than 20 mm (before binding).

4. *1.5 line spacing* (about 8 mm per line) must be used.

5. All sheets must be *numbered*. The main body of the thesis must be numbered consecutively from beginning to end. Other sections must either be included or have their own logical numbering system.

6. The *title page* must contain the following information:

   (a) University and School names.

   (b) Title of Thesis/Project.

   (c) Name of Author and student ID.

   (d) The degree the thesis is submitted for.

   (e) Submission date (month and year).

   (f) Supervisor's name (for undergraduate theses).

7. After the body of the thesis, the thesis *must* contain a Bibliography or References list as appropriate.

   Authors should confer with their supervisors and School about the style of their bibliography, as this varies between disciplines.

3.2 Other physical appearance

Other requirements to the physical appearance of your theses are:

1. *Graphs, diagrams and photographs* should be inserted as close as possible to their *first reference* in the text. Rotated graphs etc are to be arranged so as to be conveniently read, with the bottom edge to the outside of the page. *Graphs and diagrams must be legible!*

2. *Supplementary material (for example CFD animations)* may be submitted either online or via external drive, and must be referred to within the text. The text should make sense without the supplementary material available.

3.3 Submission

Finally, here are some requirements to the submission procedure.

1. The *author* of the thesis is *responsible* for the preparation of the thesis before the deadline, proofreading the typescript and having corrections made as necessary.

2. For undergraduate theses, there is a *page limit* of 50 pages for the main body of the thesis.

Chapter 4

Content Requirements

Students should consult the literature (e.g. [**?**, **?**, **?**, **?**]) and other resources for material on how to write a good thesis. The present document is only a very brief introduction as to what is expected.

4.1 Structure

Most theses are structured very much like the present document. The main part of the thesis can be structured in many different ways, however, but must contain: a *problem definition*; *theory* and *considerations* on how to solve the problem; a description of the *solution method* (dimensioning, construction, etc.); presentation of *results* (measurements, simulations, etc.); a *discussion* of the results (validity, deviations, comparison with previous solutions, etc.); and finally the *conclusions*.

4.2 Style of writing

1. Audience: The thesis must be addressed to engineers at the same level as the student but without the special knowledge gained during the thesis work. Such

a third-person must be able to reconstruct the results on the basis of the thesis alone.

2. Every used concept/symbol/abbreviation which is not widely know must be *defined*. The wording should be *short* and *concise*. Readable(!) *figures* and *graphs* enhances comprehensibility.

3. Units. *SI units* must be used.

4.3 Documentation

1. The work must be well documented; i.e. enclosed must be the *complete schematics* of designed electronic circuits/test set-ups and/or a *program listing*, and/or etc. Documentation of *simulation results* and/or *measurement results* likewise.

2. References: For every declaration/equation/method/etc., which is not widely known, a *reference to the literature* must be given (or a 'proof' if it is the authors own work). In case material is copied verbatim, quotes must be used. This is also the case when referring to partners work in the case of a Group Thesis.

3. Plagiarism: Failure to give proper references to the literature is *plagiarism*. Plagiarism is considered serious offence and severe penalties may apply.

Chapter 5

Evaluation

This chapter is mainly provided for the purpose of showing a typical thesis structure. There are no more thesis requirements described.

5.1 Results

The result of this work is the present document, being both a LaTeX template and a thesis requirement specification.

5.2 Discussion

The Dual function of this document somewhat de-emphasises the primary purpose of the document, namely the thesis requirements. It would be better, if these could be stated on a few concise pages (cf Appendix 1, p11).

Chapter 6

Conclusion

A thesis requirements/template document has been created. This serves the dual purposes of giving students specific requirements to their theses — both style and content related — while providing a typical thesis structure in a LaTeX template.

6.1 Future Work

Extract the requirements from the template in order to have very concise requirements.

Appendix 1

This section contains the options for the UNSW thesis class; and layout specifications used by this thesis.

A.1 Options

The standard thesis class options provided are:

undergrad	default
hdr	
11pt	default
12pt	
oneside	default for HDR theses
twoside	default for undergraduate theses
draft	(prints DRAFT on title page and in footer and omits pictures)
final	default
doublespacing	default
singlespacing	(only for use while drafting)

A.2 Margins

The standard margins for theses in Engineering are as follows:

	U'grad	HDR
`\oddsidemargin`	40 mm	40 mm
`\evensidemargin`	25 mm	20 mm
`\topmargin`	25 mm	30 mm
`\headheight`	40 mm	40 mm
`\headsep`	40 mm	40 mm
`\footskip`	15 mm	15 mm
`\botmargin`	20 mm	20 mm

A.3 Page Headers

A.3.1 Undergraduate Theses

For undergraduate theses, the page header for odd numbers pages in the body of the document is:

Author's Name	*The title of the thesis*

and on even pages is:

The title of the thesis	Author's Name

These headers are printed on all mainmatter and backmatter pages, including the first page of chapters or appendices.

A.3.2 Higher Degree Research Theses

For postgraduate theses, the page header for the body of the document is:

The title of the chapter or appendix

This header is printed on all mainmatter and backmatter pages, except for the first page of chapters or appendices.

A.4 Page Footers

For all theses, the page footer consists of a centred page number. In the frontmatter, the page number is in roman numerals. In the mainmatter and backmatter sections, the page number is in arabic numerals. Page numbers restart from 1 at the start of the mainmatter section.

If the **draft** document option has been selected, then a "Draft" message is also inserted into the footer, as in:

	14	**Draft:** March 23, 2021

or, on even numbered pages in two-sided mode:

Draft: March 23, 2021	14	

A.5 Double Spacing

Double spacing (actualy 1.5 spacing) is used for the mainmatter section, except for footnotes and the text for figures and table.

Single spacing is used in the frontmatter and backmatter sections.

If it is necessary to switch between single-spacing and double-spacing, the commands `\ssp` and `\dsp` can be used; or there is a `sspacing` environment to invoke single spacing and a `spacing` environment to invoke double spacing if double spacing is used for the document (otherwise it leaves it in single spacing). Note that switching to single spacing should only be done within the spirit of this thesis class, otherwise it may breach UNSW thesis format guidelines.

A.6 Files

This description and sample of the UNSW Thesis LaTeX class consists of a number of files:

unswthesis.cls	the thesis class file itself
crest.pdf	the UNSW coat of arms, used by `pdflatex`
crest.eps	the UNSW coat of arms, used by `latex` + `dvips`
dissertation-sheet.tex	formal information required by HDR theses
pubs.bib	reference details for use in the bibliography
sample-thesis.tex	the main file for the thesis

The file sample-thesis.tex is the main file for the current document (in use, its name should be changed to something more meaningful). It presents the structure of the thesis, then includes a number of separate files for the various content sections. While including separate files is not essential (it could all be in one file), using multiple files is useful for organising complex work.

This sample thesis is typical of many theses; however, new authors should consult with their supervisors and exercise judgement.

The included files used by this sample thesis are:

definitions.tex	mywork.tex
abstract.tex	evaluation.tex
acknowledgements.tex	conclusion.tex
abbreviations.tex	appendix1.tex
introduction.tex	appendix2.tex
background.tex	

These are typical; however the concepts and names (and obviously content) of the files making up the matter of the thesis will differ between theses.

Appendix 2

This section contains scads of supplimentary data.

B.1 Data

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