

NANYANG TECHNOLOCAL UNIVERSITY
School of Electrical & Electronic Engineering

Guidelines for MSc Dissertations

FORMAT

1. The dissertation should be typewritten in English, in the third person and with one and a half or double spacing between lines. There is no prescribed length to the dissertation; however a good guide would be around 60 to 100 pages printed in font size 12, preferably printed double sided. You are strongly encouraged to use your own words instead of copying directly from books, technical reports, etc. The Standard International Units (SI) should be used.
2. White A-4 size bond paper of at least 80 g weight should be used (applicable for hard copy of the dissertation that requested by the examiner).
3. The margin on the left-hand side must be about 3.5 cm. On the top, bottom and right hand side, a margin of 3 cm is recommended.
4. The same type setting should be used in the main text of the report to ensure that the letters do not vary in size, type and shade. One and a half line spacing should be used for the text of the report.

Below is the summary table:

Component	Assessor
Page	White A4 size bond paper of at least 80 g/m ² (applicable for hard copy of the dissertation that requested by examiner).
Text	Times New Roman, size: 12
Margins	3.5cm margin on the left hand side and 3cm on the top, bottom and right hand sides of each page
Typing	The same font and pitch for the whole report except when highlighting important matters
Spacing	One-and-a-half line spacing
Length	60 to 100 printed pages, preferably printed double sided (applicable for hard copy of the dissertation that requested by examiner).

5. The contents of the report should be presented in the following order:
- (1) Title page
 - (2) Statement of Originality
 - (3) Supervisor Declaration Statement
 - (4) Authorship Attribution Statement
 - (5) Table of contents
 - (6) Abstract
 - (7) Acknowledgment page to give recognition of any advisory or financial assistance received in the course of the work on which the report is based *(optional)*
 - (8) Acronyms *(optional)*
 - (9) Symbols *(optional)*
 - (10) List of figures
 - (11) List of tables
 - (12) Introductory chapter
 - (13) Text chapters
 - (14) References
 - (15) Appendix/appendices *(optional)*

Click [here](#) for the dissertation template file.

6. A softcopy of dissertation, Turnitin Originality Report (in HTML format) have to upload to the Dissertation Submission E-Form for submission.
7. After the dissertation has been examined and approved, students have to submit a softcopy of the final version of the dissertation to the School through his supervisor and upload a copy to NTU Library (DR-NTU).
8. Samples of the cover page, title page, 3 declaration statements and Dissertation format, as well as an extract on the method of listing references, are attached in Appendices 1 to 6 respectively.

STANDARD OF WRITING

The dissertation should be logically laid out. The writing should be in grammatically correct, clear and concise English. There are many books in the NTU library, providing guidance on writing technical reports.

Any attempt to provide guidance or feature common errors here will run into many pages. So we will refrain from doing that except to say one thing: if a word (or phrase or sentence) can be deleted without changing the meaning of what you want to say, then delete it.

All figures and tables should be numbered sequentially, chapter by chapter, and be given a caption. Each must be referred to in the main text, and wherever possible appear near to where it is referred to.

CONTENTS

First and foremost, the contents of your work must be relevant to the MSc Program you are pursuing. Rather than the actual contents, which will vary from dissertation to dissertation and from program to program, this section describes the general areas, which a dissertation should address. While these areas are not necessarily universal, i.e., common to all dissertations, they are more the norm than the exception. The sample Contents page in Appendix 6 gives a pretty good summary on these areas.

1. The **Abstract** should be a short and concise passage on the important work and contributions of the project: the motivation and the problem pursued, the method you employed and the results obtained, highlighting the significant achievements. It should not contain peripheral things like summary of literature review, and it is not good enough to say that a certain issue has been studied without stating the results of the study. Generally, one page is about the right length for the Abstract.
2. The first chapter of the dissertation is almost invariably the **Introduction**. Generally, its purpose is to lead the readers into the problem you intend to attack in the project, to set the scene. The main points here consist of the *background* to the problem and your *motivation* in solving it. This then leads into the *objectives* and the *scope* of the project. It is good to conclude your Introduction with a section on the *layout* of the dissertation. It prepares the readers for what is to come.
3. Then comes the main part of your work. To lay the ground, there should first be a chapter on what has been done before on the problem - a **Literature Review**. This is an important section because it shows that you do not narrowly focus only on what you do, but are aware of the

related work elsewhere, some of which might be instructive to your solving the problem. It can also explain why you are taking the direction you do.

4. The next few chapters should describe the work you have done in tackling the problem. There might be a chapter on the fundamental theories relevant to the solution you are pursuing, or the supporting technologies you need in implementing the solution. Then there should be a chapter on the solution itself, followed by a chapter on the results and analysis of the results.
5. The last chapter is always the **Conclusion**. This generally should have three parts. The first is a concise *summary* of the work you have done. In a way, this is similar to the abstract. Then there is the *conclusion*, in which you highlight the significance of the results, and perhaps the consequences of the results, critically where necessary. The last thing is usually *recommendations* and/or *future work*, in which you identify the inadequacies of what you have done, and suggest how the gaps may be plugged.
6. Generally, there should be no more than six or seven chapters in your dissertation. If you have more than that, you should take a close look at its organisation and see if certain chapters can be merged.

SUPPLEMENTARY ELEMENTS

1. Documents that are prepared with the help of other sources should have a list of sources cited. A list of **References** contains only sources the writer quotes directly, takes original ideas from, and refers to in the dissertation should be included. In reports where the subject is primarily scientific, the list of references is the most widely accepted way to cite specific sources.
2. The **Appendix** contains related data not necessary to the immediate understanding of the discussion in the report. This may contain materials such as: tables, graphs, illustrations, description of equipment, samples of forms, data sheets, questionnaires, equations, and any material that must be included for record purposes.

Each entry (sample forms, detailed data for references, tables, pictures, questionnaires, charts, maps, graphic representations) in the appendix requires an identifying title. Every entry in the appendix must be referred to in the body of the report. Each appendix must be lettered, beginning with Appendix A. The list of appendices should be appearing in the table of contents following the list of references entry.

REFERENCES

- [1] Blake G. and Bly R.W., The Elements of Technical Writing, MacMillan, 1993.
- [2] Blicq R. S., Technically-Write, Prentice-Hall, 1992.
- [3] Turk C. and Kirkman J., Effective Writing, E & FN Spon, 1989.
- [4] IEEE guideline

Appendix 1: COVER PAGE



**NANYANG
TECHNOLOGICAL
UNIVERSITY**

SINGAPORE

**ENHANCING PLAY-OUT PERFORMANCE
FOR
INTERNET VIDEO COMMUNICATIONS**

**ZHANG LAN
SCHOOL OF ELECTRICAL AND ELECTRONIC
ENGINEERING**

201X

(Submission year)

Appendix 2: TITLE PAGE

**ENHANCING PLAY-OUT PERFORMANCE
FOR
INTERNET VIDEO COMMUNICATIONS**

ZHANG LAN

SCHOOL OF ELECTRICAL AND ELECTRONIC ENGINEERING

**A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF SCIENCE IN **XXX****

201X

Statement of Originality

I hereby certify that the work embodied in this thesis is the result of original research and has not been submitted for a higher degree to any other University or Institution.

[Input Date Here]

.....

Date

[Input Signature Here]

.....

[Input Name Here]

Supervisor Declaration Statement

I have reviewed the content and presentation style of this thesis and declare it is free of plagiarism and of sufficient grammatical clarity to be examined. To the best of my knowledge, the research and writing are those This thesis contains material from [x number] paper(s) published in the following peer-reviewed journal(s) where I was the first and/or corresponding author.

Please amend the typical statements below to suit your circumstances.

Chapter 4 is published as D.T. Murphy, S. Schmid, J.R. Hester, P.E.R. Blanchard, and

W. Müller. Coordination site disorder in spinel-type LiMnTiO₄. *Inorganic Chemistry*

54, 4636-4643 (2015). DOI: 10.1021/ic502747p.

of the candidate except as acknowledged in the Author Attribution Statement. I confirm that the investigations were conducted in accord with the ethics policies and integrity standards of Nanyang Technological University and that the research data are presented honestly and without prejudice.

[Input Date Here]

.....
Date

[Input Supervisor Signature Here]

.....
[Input Supervisor Name Here]

Authorship Attribution Statement

The contributions of the co-authors are as follows:

- A/Prof Schmid provided the initial project direction and edited the manuscript drafts.
- I prepared the manuscript drafts. The manuscript was revised by Dr Hester and Dr. Blanchard.
- I co-designed the study with A/Prof Siegbert Schmid and performed all the laboratory work at the School of Materials Science and Engineering and the Singapore Synchrotron Light Source. I also analyzed the data.
- All microscopy, including sample preparation, was conducted by me in the Facility for Analysis, Characterization, Testing and Simulation.
- Dr James Hester assisted in the collection of the neutron powder diffraction data.
- Dr Peter Blanchard assisted in the interpretation of the X-ray absorption spectroscopy data and carried out the spectral interpretation.
- Dr Wojciech Miiller assisted in the collection and provide guidance in the interpretation of the magnetic measurement data.

Chapter 5 is published as H. V Doan, B. Yao, Y. Fang, A. Sartbaeva, U. Hintermair,

X P Ting, Controlled Formation of Hierarchical Metal-Organic Frameworks using CO₂ Expanded Solvent Systems. In press, *ACS Sustainable Chemistry & Engineering* (2017). DOI: 10.1021/acssuschemeng.7b01429.

The contributions of the co-authors are as follows:

- Prof Ting suggested the materials area and edited the manuscript drafts.
- I wrote the drafts of the manuscript. The manuscript was revised together with Dr. Sartbaeva and Dr. Yao.
- I performed all the materials synthesis, collected X-ray diffraction patterns and visible light spectra, carried transmission electron microscopy, and conducted data evaluation.
- Dr. Y. Fang conducted the Rietveld analysis of the powder X-ray diffraction data and single crystal structure determinations.
- Dr U. Hintermair conducted the molecular dynamics simulations.
- Ms. A. Sartbaeva prepared the samples for electron microscopy.

[Input Date Here]

[Input Signature Here]

.....

Date

.....

[Input Name Here]

Appendix 6: DISSERTATION FORMAT

Table of Contents

	<u>Page</u>
Abstract	
Acknowledgement <i>(optional)</i>	ii
Acronyms <i>(optional)</i>	iii
Symbols <i>(optional)</i>	iv
Lists of Figures	v
List of Tables	vi
Chapter 1 Introduction	1
1.1 Background	
1.2 Motivation	
1.3 Objectives and Specifications	
1.4 Major contribution of the Dissertation	
1.5 Organisation of the Dissertation	
Chapter 2 Literature Review	6
2.1 Prior Art	
2.2 XXX	
Chapter 3 (Actual work done and contribution, including literature survey)	
3.1 XXX	
3.2 XXX	
. Layout Implementation and Verification	
. Simulation Results and Measurement	
. .	
. .	
Chapter 6 Conclusion and Recommendations	
6.1 Conclusion	

6.2 Recommendations for further research

References

Appendix A *(optional)*

Appendix B *(optional)*

Abstract

Multihop cellular networks (MCNs) incorporate wireless ad hoc networking into *traditional* single-hop cellular networks (SCNs) and thus they enjoy the flexibility of ad hoc networks, while preserving the benefit of using infrastructure of SCNs. In this Thesis, we study the resource allocation problems in MCNs.

Xxxx ...

Acknowledgements **(optional)**

First of all, I would like to express my sincere thanks and great gratitude to my
parents. ...

Xxx Xxx

November 2010

Acronyms (optional)

2G	Second Generation
3G	Third Generation
ACA	Adaptive Channel Assignment
AP	Access Point
ARS	Ad-hoc Relaying Station
ASP	Adaptive Switching Point
ATDMA	Advanced Time Division Multiple Access
BS	Base Station
CAMA	Cellular Aided Mobile Ad-hoc Network
CBM	Cellular Based Multihop Systems
CDD	Code-Division Duplexing
D-PRMA	Distributed PRMA
DA	Demand Assignment
DCA	Dynamic Channel Assignment

Symbols (optional)

B	channel bandwidth in Hz
C	channel capacity in bps; number of collisions in time slot t
d	distance
D	minimum reuse distance
D_a	average message access delay
D_{id}	inter-datagram-arrival time
D_{max}	maximum tolerable delay for voice packets
D_{pc}	reading time between two consecutive packet call requests

List of Figures

Figure 1.1: Proposed CMCN architecture.....	10
Figure 1.2: TDD-CDMA MCNs with fixed RSs.....	13
Figure 2.1: Illustration of FDMA, TDMA and CDMA.....	16
Figure 2.2: Near-far effect in CDMA cellular systems.....	21
Figure 2.3: Illustration of channel borrowing schemes.....	25
Figure 2.4: Structure of reuse partitioning.....	26
Figure 2.5: Classifications of medium access control protocols.....	36
Figure 2.6: Frame structure of PRMA.....	39
Figure 2.7: Frame structure of PRMA++.....	43

List of Tables

Table 2-1: ACO matrix at BS i	30
Table 2-1: Comparison of selected MCN architectures.....	74
Table 2-1: Call blocking with different (N0, N1) combinations at $\rho=5$ Erlangs...	103
Table 4-2: System capacity for uplink and downlink vs. channel combinations...	107
Table 5-1: Interference Information Table for uplink.....	113
Table 5-2: Interference Constraint Table for the simulated network.....	113
Table 5-3: Packing-based Channel Searching for uplink.....	116
Table 6-1: System parameters for TDD CDMA systems.....	139
Table 6-2: Supported number of simultaneous voice users.....	146
Table A-1: Example of uplink call combinations for state (8,2,1,2,1,3,2).....	164
Table B-1: Example of downlink call combinations for state (24,2,1,2,1,3,2).....	168

Chapter 1

Introduction

This chapter

1.1 Motivations

This thesis deals with the problem of the blind multiuser detection for DS-CDMA ...

1.2 Objectives and Scope

The communication channel considered in this thesis is assumed to be slow time-varying,

...

1.3 Organisations

....

Chapter 2

Literature Review

2.1 xxx

2.2 xxx

Chapter 3

XXXX

3.1 xxx

3.2 xxx

Chapter 6

Conclusions and Future Work

6.1 Conclusions

...



6.2 Recommendation in Future Work

...

References

- [1] R. Jordan and C. T. Abdallah, "Wireless communications and networking: An overview," *IEEE Antennas and Propagation Magazine*, vol. 44, pp. 185-193, February, 2002.
- [2] J. E. Padgett, C. G. Gunther, and T. Hattori, "Overview of wireless personal communications," *IEEE Communications Magazine*, vol. 33, pp. 28-41, January, 1995.
- [3] G. L. Stuber, *Principles of Mobile Communication*, 1st ed. New York: Springer, 1996.
- [4] GSM Association, "Worldwide cellular connections exceeds 2 billion," http://www.gsmworld.com/news/press_2005/press05_21.shtml, 2005.
- [5] The Portio Research Limited, *Worldwide Mobile Market Forecasts 2006-2011*, 1st ed. Market Study, UK, 2006.
- [6] P. Chaudhury, W. Mohr, and S. Onoe, "The 3GPP proposal for IMT-2000," *IEEE Communications Magazine*, vol. 37, pp. 72-81, December, 1999.
- [7] A. Urie, M. Streeton, and C. Mouro, "An advanced TDMA mobile access system for UMTS," *IEEE Personal Communications*, vol. 2, pp. 38-47, February, 1995.
- [8] H. Holma and A. Toskala, *WCDMA for UMTS: Radio Access for Third Generation Mobile Communications*, 3rd ed. Chichester, West Sussex, UK: John Wiley & Sons, 2004.
- [9] H. H. Chen, C. X. Fan, and W. W. Lu, "China's perspectives on 3G mobile communications and beyond: TD-SCDMA technology," *IEEE Wireless Communications*, vol. 9, pp. 48-59, April, 2002.
- [10] C. E. Perkins, *Ad Hoc Networking*, 1st ed. Boston MA, USA: Addison-Wesley, 2001.
- [11] C.-Y. Chong and S. P. Kumar, "Sensor networks: Evolution, opportunities, and challenges," *Proceedings of The IEEE* vol. 91, pp. 1247-1256, August, 2003.
- [12] A. Bria, F. Gessler, O. Queseth, R. Stridh, M. Unbehaun, J. Wu, J. Zander, and M. Flament, "4th-generation wireless infrastructures: Scenarios and research challenges," *IEEE Personal Communications*, vol. 8, pp. 25-31, December, 2001.
- [13] S. Y. Hui and K. H. Yeung, "Challenges in the migration to 4G mobile systems," *IEEE Communications Magazine*, vol. 41, pp. 54-59, December, 2003.
- [14] A. K. Salkintzis, "Interworking techniques and architectures for WLAN/3G integration toward 4G mobile data networks," *IEEE Wireless Communications*, vol. 11, pp. 50-61, June, 2004.

Appendix (optional)

Spine	Hard Bound Cover	Title Page	SAMPLE
<p>ENHANCING PLAY-OUT PERFORMANCE FOR INTERNET VIDEO COMMUNICATIONS</p> <p>ZHANG SAN 200X</p>	 <p>NANYANG TECHNOLOGICAL UNIVERSITY</p> <p>ENHANCING PLAY-OUT PERFORMANCE FOR INTERNET VIDEO COMMUNICATIONS</p> <p>ZHANG SAN</p> <p>SCHOOL OF ELECTRICAL AND ELECTRONIC ENGINEERING</p> <p>200X</p>	 <p>NANYANG TECHNOLOGICAL UNIVERSITY</p> <p>ENHANCING PLAY-OUT PERFORMANCE FOR INTERNET VIDEO COMMUNICATIONS</p> <p>ZHANG SAN</p> <p>SCHOOL OF ELECTRICAL AND ELECTRONIC ENGINEERING</p> <p>A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN XXX</p> <p>200X</p> <p>Length 297mm (A4 size)</p> <p>Width 210mm (A4 size)</p>	<p>To Note:</p> <ul style="list-style-type: none"> - Colour of Hard Bound Cover : Dark Blue - Colour of Lettering : Gold - Size of Lettering: Not exceeding 16 pts - Dissertation Title & Author's Name: Block Letter - Year: Year of Submission of Hard Bound Dissertation - Author's Name (on spine): Use abbreviation if space is insufficient <p>Dissertation must be preceded by the following:</p> <ul style="list-style-type: none"> - Title Page - Abstract - Acknowledgements - Table of Contents - List of figures/tables/symbols - Introductory Chapter - Text Chapters - Reference/Bibliography - Appendix/appendices