



GUIDELINES FOR THE PREPARATION OF Ph. D. THESIS

1. GENERAL

The manual is intended to provide broad guidelines to the research scholars in the preparation of the Thesis. In general, the Thesis shall report, in an organized and scholarly fashion, an account of original research work of the research scholar leading to the discovery of new facts or techniques or correlation of facts already known (analytical, experimental, hardware oriented, etc.). Thesis shall demonstrate a quality as to make a definite contribution to the advancement of knowledge and the research scholar's ability to undertake sustained research and present the findings in an appropriate manner with actual accomplishments of the work.

Instruction

The scholars are expected to read carefully the instructions given in the sequel and meticulously follow them in the preparation of the Thesis. Non-compliance with any of these instructions may lead to the rejection of the Thesis submitted.

2. SIZE OF THESIS

The size of the Thesis should not exceed **300 pages** of typed matter reckoned from the first page of Chapter 1 to the last page of the Appendix.

3. ARRANGEMENT OF THE CONTENTS OF THE THESIS

The sequence in which the Thesis material should be arranged and bound as follows:

1. Cover Page and Title page (as shown in Appendix1)
2. Declaration by the candidate(as shown inAppendix2)

3. Bonafide Certificate (as shown in Appendix3)
4. Abstract
5. Acknowledgement
6. Table of Contents (as shown in Appendix4)
7. List of Tables
8. List of Figures
8. List of Symbols and Abbreviations (as shown inAppendix5)
9. Chapters
10. Appendices
11. References
- 12.List of Publications
- 13.Curriculum Vitae

The Tables and Figures should be included at appropriate places in the text of the Thesis.

4. PAGE DIMENSIONS AND MARGIN

Standard **A4 Size White Bond paper** may be used for preparing the copies. The dimensions of the final bound Thesis (3 copies) report should be 290 mm x 205 mm. Thesis should be bound with black calico cloth and using flexible cover of thick white art paper.

The final thesis (at the time of submission) should have the following margins:

Top edge	:	30 to 35mm
Bottom edge	:	25 to 30mm
Left side	:	35 to 40mm
Right side	:	20 to 25mm

Tables and Figures should conform to the margin specifications. The captions of Tables and Figures should be bold and centered. Large size Figures should be photographically or otherwise reduced to the appropriate size before insertion.

5. MANUSCRIPT PREPARATION

In the preparation of the manuscript, care should be taken to ensure that all textual matter is type written to the extent possible in the same format as may be required for the final Thesis. Hence some of the information required for the final typing of the Thesis is also included in this section.

The heading of all items from 2 to 12 listed in section 3 should be typed in capital letters without function and centered 50 mm below the top of the page. The text should commence 4 spaces below this heading. The page numbering for all items from 1 to 8 should be done using lower case Roman numerals and the pages thereafter should be numbered using Arabic numerals.

Equations may be preferably typed using Microsoft Equation Editor or other Equation Editors.

5.1 Cover Page & Title Page - A specimen copy of the Cover page and Title page for the Thesis is given in **Appendix 1**.

5.2 Declaration by the Candidate-Typical copy of declaration by the Ph.D candidate is enclosed in **Appendix 2**. *The scholar's signature* shall be made at the bottom right end above his/her name typed in capitals.

5.3 Bonafide Certificate - The Bonafide Certificate shall be typed in **double line spacing using Font Style Times New Roman and Font Size 13** as per the format shown in **Appendix 3**.

The certificate shall carry the Supervisor's signature and shall be followed by **Supervisor's name, academic designation (not any other responsibilities of administrative nature)**, department and full address of the institution where the Supervisor has guided the research scholar. The term 'SUPERVISOR' must be typed in capital letters between the Supervisor's name and academic designation. Signature of the Joint Supervisor with the details specified as above should be included wherever it is applicable. Other details are shown in **Appendix 3**.

- 5.4 Abstract** - Abstract should be an essay type of narration **not exceeding four pages** outlining the research problem, methodology used for tackling it and a summary of the findings. This shall be typed in **double line spacing using Font Style Times New Roman and Font Size13**.
- 5.5 Acknowledgement**– It should be brief and should **not exceed one page** when typed in double spacing. *The scholar’s signature* shall be made at the bottom right end above his/her name typed in capitals.
- 5.5 Table of Contents** should list all captions following it as well as any caption which precedes it. The title page, Bonafide Certificate and Acknowledgment will not find a place among the items listed in the Table of Contents but the page numbers of which are in lowercase Roman letters. One and a half spacing should be adopted for typing the matter under his head. A specimen copy of the Table Contents for the Thesis is given in **Appendix4**.
- 5.6 List of Table** - The list should use exactly the same captions as they appear above the Tables in the text. One and a half spacing should be adopted for typing the matter under this head.
- 5.7 List of Figures** - The list should use exactly the same captions as they appear below the Figures in the text. One and a half spacing should be adopted for typing the matter under this head.
- 5.8 Tables and Figures** – “Table” means tabulated numerical data in the body of the Thesis as well as in the appendices. All other non-verbal material used in the body of the Thesis and appendices such as charts, graphs, maps, photographs and diagrams may be designated as Figures.

- A Table or Figure including caption should be accommodated within the prescribed margin limits and appear on the page following the page where their first reference is made.
- Tables and Figures on half page or less in length may appear on the same page along with the text. However, they should be separated from the text both above and below by triple spacing.
- All Tables and Figures should be prepared on the same paper or material used for the preparation of the rest of the Thesis.
- Two or more small Tables or Figures may be grouped if necessary in a single page.
- Wherever possible, the photograph(s) shall be reproduced on a full sheet of photographic paper or color Xerox.
- More than one photograph can be included in a page.
- Samples of Fabric, Leather, etc., if absolutely necessary may be attached evenly in a page and fixed/pasted suitably and should be treated as Figures.

5.9 List of Symbols and Abbreviations- One and a half spacing should be adopted for typing the matter under this head. Standard symbols, abbreviations, etc. should be used. The list should be arranged **alphabetically with respect to the contents** on the right side as shown in **Appendix5**.

Chapters - The chapters may be broadly divided into 3 parts:

(i) Introductory chapter

The introductory chapter will have sections covering: (a) general introduction and importance of the project area, (b) Literature survey, and (c) Objectives of the proposed research project.

(ii) Chapters developing the main theme of the Thesis, Materials and Methods, Results and Discussion

The main text will be divided into several chapters and each chapter may be further divided into several divisions and sub-divisions.

- ❖ Each chapter should be given an appropriate title.
- ❖ Tables and figures in a chapter should be placed in the immediate vicinity of the reference where they are cited.

(iii) Conclusions and Scope

5.10 Appendices - Appendices are provided to give supplementary information, which if included in the main text may serve as a distraction and cloud the central theme under discussion.

- ✓ Appendices should be numbered using Arabic numerals, **e.g. Appendix 1, Appendix 2, etc.**
- ✓ Appendices, Tables and references appearing in appendices should be numbered and referred to at appropriate places just as in the case of chapters.
- ✓ Appendices shall carry the title of the work reported and the same title shall be included in the Table of Contents page also.
- ✓ The list of publications (those already published/accepted for publication in Journals and papers presented in Conferences/Symposia) made by research scholar during the period of research, shall be brought in the Appendix titled, as List of Publications and the same shall be reported in the Table of Contents.

5.12 List of References - Any works of other researchers, if used either directly or indirectly, the origin of the material thus referred to at appropriate places in the Thesis should be indicated. The author's publications during the period of research should not be included in the references and can be separately mentioned as in 5.11. A paper, a monograph or a book may be designated by the name of the first author followed by the year of publication, placed inside brackets at the appropriate places in the Thesis. The citation may assume any one of the following forms.

Examples of Citation

- (i) An improved algorithm has been adopted in the literature(Rupf2009)
- (ii) Massey and Mittelholzer (2008) have dealt at length this principle
- (iii) The problem of mechanical manipulators has been studied by Anigstein et al. (2010) and certain limitations of the method used, has been pointed out by Anigstein et al.(2010).
- (iv) When reports prepared by well known agencies are cited, the name of the organization (Example: World Health Organization, Bureau of Indian Standards) with year of publication may be given as citation. Ex: World Health Organisation (2006)

The listing should be typed 4 spaces below the heading "REFERENCES" in single spacing. The reference material should be listed in the alphabetical order of the first author. The name of the author/authors should be immediately followed by the other details and year. A typical illustrative list given below relates to the citation example quoted above.

Examples of references

Abdou. L., Ami Saada. R., Meftah. F. and Mebarki. A. (2006) "Experimental investigations of the joint-mortar behaviour", *Mechanics Research Communications* 33, 370-379.

Central Ground Water Board Ministry of Water Resources Government of India. (2010) "Groundwater Quality in Shallow Aquifers of India", Faridabad.

Deodhar.S.V.andPatel.A.N.(1996)"Behaviorofbrickmasonryincompression"
Journal of Structural Engineering 22,221-227.

Mitsch. W.J. and Gosselink. J.G. (1993) *Wetlands*, Second Edition, Van Nostrand Reinhold, New York, 110-111.

Sarangapani.G., Venkatarama Reddy. B.V. and Jagadish. K.S.(2009) “Structural characteristics of bricks, mortars and masonry” Journal of Structural Engineering 29 (2),101-110.

Tomazevic. M. (2009) “Shear resistance of masonry walls and Euro code 6: shear versus tensile strength of masonry”, Materials and Structures 42, 889-895.

Wong. Y. L., Lam L., Poon. C. S. and Zhou. F. P. (1999) “Properties of fly ash-modified cement mortar-aggregate interfaces”, Cement and Concrete Research 29, 1905-1911.

5.13 Curriculum Vitae - A vitae restricted to one page in double spacing containing the salient potentialities of the author shall be made at the end of the Thesis.

6. TYPING INSTRUCTIONS

6.1 General

This section includes additional information for final typing of the Thesis. The impressions on the typed/Xeroxed/printed copies should be black in colour.

A sub-heading at the bottom of a page must have at least two full lines below it or else it should be carried over to the next page.

The last word of any page should not be split using a hyphen. One and a half spacing should be used for typing the general text. The general text shall be typed in Font Style **Times New Roman** and **Font Size 13**. **One and half** spacing should be used for typing:

- (i) Long Tables
- (ii) Long quotations
- (iii) Foot notes
- (iv) Multi line captions
- (v) References

All quotations exceeding one line should be typed in an indented space - the indentation being 15 mm from either side of the margin.

6.2 Chapters

The format for typing Chapter headings, Division headings and Sub-division headings are explained by the following illustrative examples.

Chapter heading (bold, caps, size: 16) : **CHAPTER 1 INTRODUCTION**

Division heading (bold, caps, size: 13) : **1.1 THESIS OUTLINE**

Sub-division heading (bold, size: 13) : **1.1.1 Literature Review**

The word CHAPTER without punctuation should be centered 50mm down from the top of the page. Two spaces below, the title of the chapter should be typed centrally in capital letters. The text should commence 4 spaces below this title, the first letter of the text starting 20 mm inside from the left hand margin.

The division and sub-division captions along with their numberings should be left justified. The typed material directly below division or sub-division heading should commence 2 spaces below it and should be offset 20 mm from the left hand margin. Within a division or sub-division paragraphs are permitted. Even paragraph should commence 3 spaces below the last line of the preceding paragraph, the first letter in the paragraph being offset from the left hand margin by 20mm.

7. NUMBERING INSTRUCTIONS

7.1 Page Numbering

All page numbers (**whether it is in Roman or Arabic numbers**) should be typed without punctuation on the central bottom of each page. The preliminary pages of the Thesis (such as Title page, Acknowledgement, Table of Contents, etc.) should be numbered in lower case Roman numerals. The title page will be numbered as (i) but this should not be typed. The page immediately following the title page shall be numbered as (ii) and it should appear at the top right hand corner as already specified. Pages of main text, starting with Chapter 1 should be consecutively

numbered using Arabic numerals.

7.2 Numbering of Chapters, Divisions and Sub-Divisions

The numbering of chapters, divisions and sub-divisions should be done using Arabic numerals only and further decimal notation should be used for numbering the divisions and sub-divisions within a chapter. For example sub-division 4 under division 3 belonging to chapter 2 should be numbered as 2.3.4. The caption for the sub-division should immediately follow the number assigned to it. Every chapter beginning with the first chapter should be serially numbered using Arabic numerals. Appendices, included if any, should also be numbered in an identical manner starting with Appendix 1.

7.3 Numbering of Tables and Figures

Tables and Figures appearing anywhere in the Thesis should bear appropriate numbers. The rule for assigning such numbers is illustrated by an example. Thus, if a Figure in Chapter 3, happens to be the fourth then assign 3.4 to that Figure. Identical rules apply for Tables except that the word Figure is replaced by the word Table. If Figures (or Tables) appear in appendices then Figure 3 in Appendix 2 will be designated as Figure A 2.3. If a table to be continued into the next page this may be done, but no line should be drawn underneath an unfinished Table. The top line of the Table continued into the next page should, for example read Table 2.1 (continued) placed centrally and underlined.

7.4 Numbering of Equations

Equations appearing in each Chapter or Appendix should be numbered serially, the numbering should commence afresh for each Chapter or Appendix. Thus for example, an equation appearing in Chapter 4, if it happens to be the eighth equation in that Chapter should be numbered as (4.8) thus:

While referring to this equation in the body of the Thesis it should be referred to as Equation (4.8).

8 BINDINGSPECIFICATIONS

Thesis (3 copies) should be bound with black calico cloth and using flexible covers of thick white paper. The cover should be printed in black letters and the text for printing should be identical to what has been prescribed for the title page.

Soft copy of the thesis in CD form (1 Nos) should be submitted for the Institution Archives and for any other purpose deemed fit by the authorities.

A typical Specimen of Cover Page and Title Page

TITLE (*should be in capital letters*)

<1.5 line spacing>

A THESIS

submitted by

<Italic>

SCHOLAR's NAME(Reg. No.)

(previous degree Certificate Name only, Qualification should not be mentioned)

in partial fulfillment for the requirement of award of the degree of

<Italic><1.5 line spacing>

DOCTOR OF PHILOSOPHY

in

under the supervision of

<Italic>

SUPERVISOR's NAME (*Qualification should not be mentioned*)

and the joint supervision of

<Italic>

JOINT SUPERVISOR's NAME (*Qualification should not be mentioned*)

**SCHOOL OF ENGINEERING &
TECHNOLOGY/ARTS & SCIENCES/AGRICULTURE
& BIOSCIENCES/MANAGEMENT** (*font size16*)



Karunya INSTITUTE OF TECHNOLOGY AND SCIENCES

Declared as Deemed-to-be University under sec. 3 of UGC Act, 1956

Karunya Nagar, Coimbatore 641 114, Tamil Nadu, India.

DECEMBER 2017 (*should be in capitals Font Size 16*)

INVESTIGATIONS ON MACHINING OF Al-TiB₂ METAL MATRIX COMPOSITES USING MINIMAL QUANTITY LUBRICATION

A THESIS

Submitted by

ROBERT L (09ZB021)

in partial fulfillment for the requirement of award of the degree of

DOCTOR OF PHILOSOPHY

in

MECHANICAL ENGINEERING

under the supervision of

Dr. CHRISTY T V

and the joint supervision of

Dr. ROBINSON SMART D S

SCHOOL OF ENGINEERING & TECHNOLOGY



Karunya INSTITUTE OF TECHNOLOGY AND SCIENCES

Declared as Deemed-to-be University under sec. 3 of UGC Act, 1956

Karunya Nagar, Coimbatore 641 114, Tamil Nadu, India.

DECEMBER 2017

APPENDIX 2**DECLARATION***(should be in capital letters)*

<Font Size 13, <1.5 line spacing>

I, Name (Reg. No.) hereby declare that the thesis, entitled “_____”, submitted to the **Karunya Institute of Technology and Sciences**, in partial fulfillment of the requirements for the award of the Degree of **Doctor of Philosophy** in _____ is a record of original and independent research work done by me during the period 2012– 2015, under the Supervision and guidance of **(Name), (Designation), (Department)**, Karunya Institute of Technology and Sciences and under the Joint-Supervision of **(Name), (Designation), (Department)**, Karunya Institute of Technology and Sciences. The work contained in this thesis has not been previously submitted to meet the requirements for a degree or diploma at this or any other higher education institution.

I understand that Karunya Institute of Technology and Sciences shall hold the copyrights of all theses/dissertations submitted to the University. I will republish the entire thesis /extracts of the thesis only with the permission of Karunya Institute of Technology and Sciences and I am liable to pay 40% of royalty to Karunya Institute of Technology and Sciences. If I engage in documenting any research findings with an intention of publishing it for commercial purpose, I shall obtain a NOC from the Office of the Registrar prior to engaging in such activities.

ROBERT L*(font size**13)(Don't type) Scholar's signature should be above his/her name*

<Roman Numbering Font size 13 >

APPENDIX 3**BONAFIDE CERTIFICATE***(should be in capital letters)*

 <1.5 linespacing>

Certified that this Thesis titled“ _____” is the bonafide work of **Name** **(Reg. No.)** who carried out the research under my supervision. Certified further, that to the best of my knowledge the work reported herein does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other scholar.

<<Signature of the Joint-Supervisor>>

<<Signature of the Supervisor>>

<<Name of Joint-Supervisor>><<Name of Supervisor>>

JOINT-SUPERVISOR

SUPERVISOR

<<Academic Designation>>

(not any other responsibilities of administrative nature)

Countersigned by

<<Signature of the Dean>>

<<Dean Name and Official Address>>

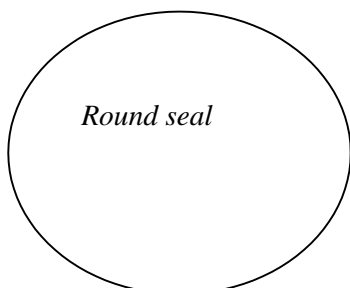


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