

# GUIDELINES FOR THE PREPARATION OF PH.D.THESIS

CENTRE FOR RESEARCH & CONSULTANCY



**HINDUSTAN**

INSTITUTE OF TECHNOLOGY & SCIENCE  
(DEEMED TO BE UNIVERSITY)

CHENNAI

## **1. GENERAL**

The Thesis prepared and submitted by the research scholar is an organized and scholarly documentation of an original research work carried out by him/her over a period of time. It is the basis on which the examiners will express their opinion whether the scholar's work has resulted in the discovery of new facts or techniques as yet unknown according to the present State of the Art and thus a definite contribution to the advancement of knowledge.

## **2. SEQUENCE OF ARRANGEMENT OF THESIS**

The Thesis material should be arranged in the following sequence:

COVER PAGE

BONAFIDE CERTIFICATE

DECLARATION

ACKNOWLEDGEMENT

TABLE OF CONTENTS

ABSTRACT

1. LIST OF TABLES

2. LIST OF FIGURES

3. LIST OF PHOTOGRAPHS (If applicable)

4. LIST OF MAPS (If applicable)

5. LIST OF SYMBOLS

6. ABBREVIATIONS

CHAPTER – 1        INTRODUCTION

CHAPTER – 2        REVIEW OF LITERATURE

                         2.1        RESEARCH GAP

2.2	OBJECTIVE / HYPOTHESIS
CHAPTER – 3	MATERIALS AND METHODS / RESEARCH DESIGN / RESEARCH METHODOLOGY (suitable title can be selected)
CHAPTER – 4	RESULTS AND DISCUSSION (can be more than one chapters)
CHAPTER – 5	CONCLUSIONS
CHAPTER – 6	FUTURE DIRECTIONS
	BIBLIOGRAPHY / REFERENCES
	ANNEXURE – I
	ANNEXURE – II
	LIST OF PUBLICATIONS
	REPRINTS OF PUBLICATIONS

The actual Tables, Figures and Photographs should be included at appropriate places in the body of the Thesis with an appropriate numbering and captions/titles

### **3. PAGE DIMENSIONS AND MARGIN**

The pages will be in standard A4size. The pages should have the following margins:

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

Tables and Figures also should conform to the margin specifications.

### **4. FORMAT SPECIFICATIONS FOR THE CONTENTS OF THE THESIS**

#### **4.1 COVER PAGE AND TITLE PAGE**

- A specimen copy of Cover page and Title page is shown in Annexure I.

## **4.2 BONAFIDE CERTIFICATE AND DECLARATION**

- The Bonafide Certificate should be typed in one and a half line spacing using Font Style “Times New Roman” and Font Size 13
- A sample specimen is shown in Annexure II and Annexure III respectively.

## **4.3 ABSTRACT**

- It should be a brief narration in about 400 words stating the research problem, methodology for solution, research findings and its conclusions.
- Key words should be mentioned. It should be typed in double line spacing using Font Style “Times New Roman” and Font Size 13.

## **4.4 ACKNOWLEDGEMENT**

- It should be typed in italics with one and a half spacing using Font Style “Times New Roman” and Font Size 13. A specimen copy of the acknowledgement is shown in Annexure IV.

## **4.5 TABLE OF CONTENTS**

- All contents, except the Title Page, Bonafide Certificate, Declaration and Acknowledgement will find a place in the Table of Contents. Items preceding the Table of Contents will have page numbers in lower case Roman letters. Items following the Table of contents will have Arabic style page numbers.
- One and a half line spacing should be adopted for typing the Table of Contents. A specimen copy of the Table of Contents is shown in Annexure V.

## **4.6 LIST OF TABLES**

- The captions in the list and in the text above the Table should be identical. One and a half line spacing should be adopted for the List of Tables.

## **4.7 LIST OF FIGURES**

- The captions in this list and in the text below the figure should be identical.

- One and a half line spacing should be adopted for the List of Figures.
- Any graphs or graphical representation will be known as Figure.

#### **4.8 LIST OF PHOTOGRAPHS**

- The captions in this List and in the text below the photographs should be identical.
- One and a half line spacing should be adopted for the List

#### **4.9 LIST OF SYMBOLS AND ABBREVIATIONS**

- Standard symbols and abbreviations as adopted in the particular discipline should be used.
- The list should be arranged alphabetically.

#### **4.10 CHAPTERS**

The chapters may be broadly arranged as follows:

##### **(1) INTRODUCTION:**

It includes research context, area of research, general aim, scope and relevance of the Investigation and strategy setting.

##### **(2) REVIEW OF LITERATURE:**

- (a) Can be divided into several divisions. Each division should be given a suitable title.
- (b) Review to be made till the submission of the Synopsis of the Ph.D. Thesis.

2.1 RESEARCH GAP / LACUNA TO BE IDENTIFIED

2.2 OBJECTIVES / HYPOTHESIS

##### **(3) MATERIALS AND METHODS/ RESEARCH DESIGN / RESEARCH METHODOLOGY (suitable title can be selected)**

- (a) Research work design
- (b) Materials: Characteristic features of the Materials.
- (c) Methods: The Principles, Procedures, Formulae / Algorithms (Author and the year of the concerned to be mentioned then and there).
  - Developing the analytical method proposed and computational techniques adopted.
  - Detailing the Experimental Methods developed etc.

**(4) RESULTS AND DISCUSSION:**

- Raw data are not allowed. Only Scientific Data (Raw data processed through statistical analysis) should be presented in **Tables** and **Figures**.
- Any photographs / images to be treated as **Photographs**.
- Observations, Highlights, level of significance and Inferences to be made.
- The chapter can be divided into several divisions and sub – divisions. Each division should be given a suitable title. Tables, Figures and Photographs should be placed immediately after they are referred to in the text.
- Critical thinking and logical interpretation of result with scientific reflection
- Comparing and contrasting the findings of previous researchers and scientists with obtained result of the current study and establishing that scholar's findings are superseding other till date findings. Thus validating the result.

**(5) CONCLUSION:**

- Judgement or decision reached by reasoning.
- Showing conglomeration, convergence and accomplishment of the theme.
- Brief and precise account of the main findings
- It should correlate with the objectives

**(6) FUTURE DIRECTION:**

- Application level of the current findings oriented towards the beneficiaries.

## BIBLIOGRAPHY / REFERENCES

### JOURNAL ARTICLE: WITH SINGLE AUTHOR

Waldron, S. (2008). Generalized Welch bound equality sequences are tight frames. *IEEE Transactions on Information Theory.*, 49(9), 2307 – 2309.

*Parenthetical citation:* (Waldron, 2008)

*Narrative citation:* Waldron (2008)

### JOURNAL ARTICLE: WITH TWO AUTHORS

Habeeb, M., & Sugumaran, A. (2022). Strategies of cell signaling and critical focus on etiology of hepatocellular carcinoma. *Biointerface Research in Applied Chemistry*, 12(4), 5187-5198. doi:10.33263/BRIAC124.51875198

*Parenthetical citation:* (Habeeb & Sugumaran, 2019)

*Narrative citation:* Habeeb & Sugumaran (2019)

### JOURNAL ARTICLE: WITH MORE THAN TWO AUTHORS

Grady, J. S., Her, M., Moreno, G., Perez, C., & Yelinek, J. (2019). Emotions in storybooks: A comparison of storybooks that represent ethnic and racial groups in the United States. *Psychology of Popular Media Culture*, 8(3), 207–217. <https://doi.org/10.1037/ppm0000185>

*Parenthetical citation:* (Grady et al., 2019)

*Narrative citation:* Grady et al. (2019)

### JOURNAL ARTICLE WITH AN ARTICLE NUMBER

Jerrentrup, A., Mueller, T., Glowalla, U., Herder, M., Henrichs, N., Neubauer, A., & Schaefer, J. R. (2018). Teaching medicine with the help of “Dr. House.” *PLoS ONE*, 13(3), Articlee0193972.

*Parenthetical citation:* (Jerrentrup et al., 2018)

*Narrative citation:* Jerrentrup et al. (2018)

## **REFERENCE TO CONFERENCE PAPERS, PAPERS IN COMPILED CONFERENCE PROCEEDINGS:**

Datta, A., Yadav, O. K., Singh, Y., Sountharajan, S., Karthiga, M., & Suganya, E. (2021). Real-time face swapping system using OpenCV. Paper presented at the Proceedings of the 3rd International Conference on Inventive Research in Computing Applications, ICIRCA 2021, 1081-1086. doi:10.1109/ICIRCA51532.2021.9545010

*Parenthetical citation:* (Datta et al., 2021)

*Narrative citation:* Datta et al. (2021)

### **4.11 APPENDICES**

- Appendices may be provided to give supplementary information. They should be numbered using Arabic numerals. Tables, Photographs and Figures appearing in an Appendix should be treated in the same manner as in the chapters. Each appendix should have a title which will be included in the Table of Contents.

### **4.12 LIST OF PUBLICATIONS**

Only those Publications arising out of the research work reported in the Thesis should be included in the List of Publications. They should be:

- (a) Those presented and published in Conference with a referee system.
- (b) Those published in peer reviewed journals

The format of the list of Publications will be same as in References.

## **5. TYPING INSTRUCTIONS**

### **a. General**

- One and a half line spacing should be used for typing the general text.
- Font style Times New Roman and Font Size 13 should be adopted.

### **b. Chapters**

The Chapter headings, Division headings and Sub-division headings should be as in the following example.

Chapter heading : CHAPTER 1 INTRODUCTION



Division heading : **1.1 RESEARCH CONTEXT**

Sub – division heading : **1.1.1 STATEMENT OF THE PROBLEM**

### **c. Page Numbering**

- All page numbers should be typed on the upper right hand corner 20 mm from the top with the last digit aligned with the right side margin.

The abstract page will be numbered as roman numeral (i).

- Pages of the main text starting with Chapter 1 will be consecutively numbered using Arabic numerals.

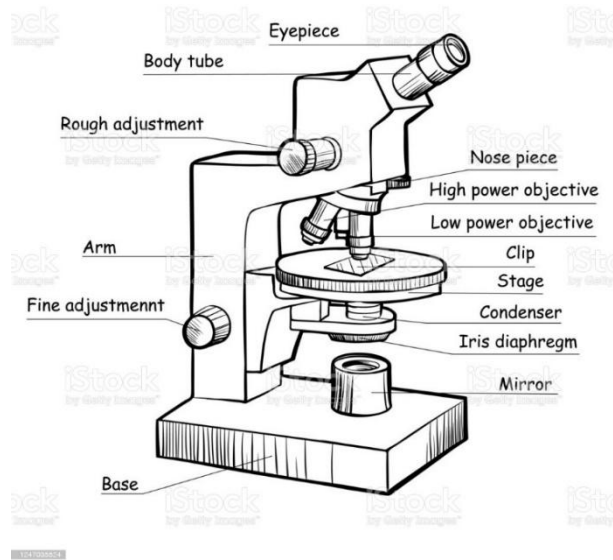
### **d. Numbering of chapters, divisions and sub-divisions**

- 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 first chapter should be serially numbered using Arabic numerals.

### **e. Numbering of tables and figures**

- Tables, Photographs and Figures should bear an appropriate but continuous numbers in a sequential order. For example the Table 1:, Table 2:, Table 3: ; Figure 1:, Figure 2:, Figure 3:; Photograph 1:, Photograph 2:, Photograph 3: etc. Identical rules apply for Tables, Figures and Photographs in the appendix. E.g., Figure 2 in Appendix 3 will be numbered as Fig. A 3.2.

- A sample figure



**Figure 1.1: Modern electronic microscope**

- A sample table

**Table 1.1: Common SI and Metric Prefixes**

Factor	Prefix	Symbol	Examples
$10^9$	giga	G	1 Gm = 1 gigameter = $10^9$ m 1 Gb = 1 gigabyte = $10^9$ bytes
$10^6$	mega	M	1 Mm = 1 megameter = $10^6$ m 1 Mb = 1 megabyte = $10^6$ bytes
$10^3$	kilo	K	1 Km = 1 kilometer = $10^3$ m 1 Kg = 1 kilogram = $10^3$ g
$10^{-1}$	deci	d	1 dm = 1 decimeter = 0.1 m
$10^{-2}$	centi	c	1 cm = 1 centimeter = 0.01 m
$10^{-3}$	milli	m	1 mg = 1 milligram = 0.001 g 1 ms = 1 millisecond = 0.001 s
$10^{-6}$	micro	$\mu$	1 $\mu$ m = 1 micrometer = $10^{-6}$ m 1 $\mu$ s = 1 microsecond = $10^{-6}$ s
$10^{-9}$	nano	n	1 ns = 1 nanosecond = $10^{-9}$ s
$10^{-12}$	pico	p	1 pg = 1 picogram = $10^{-12}$ g

**f. Numbering of equations**

Equations appearing in each chapter or Appendix will be numbered serially. For example, the fifth equation in Chapter 3 will be numbered as (3.5) and typed as follows:

$$\alpha + \beta = 0 \qquad (3.5)$$

In the body of the thesis, this equation will be referred to as Equation (3.5)

**ANNEXURE I**

**“TITLE ”**

<Font Size 18><1.5 line spacing>

THESIS SUBMITTED TO  
HINDUSTAN INSTITUTE OF TECHNOLOGY AND SCIENCE  
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR THE AWARD OF THE DEGREE OF

<Font Size 14><Times new roman>

**DOCTOR OF PHILOSOPHY**

**IN**

..... **ENGINEERING**

<Font Size 14><bold><Times new roman>

*Submitted by*

<Font Size 14><italics><Times new roman>

**Name**

**(Reg. No.: .....)**

<Font Size 14><bold><Times new roman>

**DEPARTMENT OF ..... ENGINEERING**

<Font Size 14><Times new roman>



**HINDUSTAN**

INSTITUTE OF TECHNOLOGY & SCIENCE  
(DEEMED TO BE UNIVERSITY)

CHENNAI

**PADUR, CHENNAI 603 103**  
**MONTH YEAR**

## ANNEXURE II



**HINDUSTAN**  
INSTITUTE OF TECHNOLOGY & SCIENCE  
(DEEMED TO BE UNIVERSITY)  
CHENNAI

### BONAFIDE CERTIFICATE

This is to certify that the thesis entitled “.....**Title of the thesis**.....”  
is the bonafide work of **Mr.** ..... who carried out the research under my supervision  
during the period 20... –20..... 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.

(**Dr.** .....)

Supervisor

Professor

Department of ..... Engineering  
Hindustan Institute of Technology and Science

Place: Chennai

Date:

## **ANNEXURE III**

Name of the Scholar  
Reg. No.: .....  
Ph.D. Research Scholar  
Department of ..... Engineering  
HITS, Padur.

### **DECLARATION**

I hereby declare that the thesis entitled “.....**Title of the thesis**.....” submitted by me to Hindustan Institute of Technology and Science, for the award of the degree of Doctor of Philosophy in Mechanical Engineering is a record of bonafide research work carried out by me under the guidance of Dr. .... during the period 20.. – 20.. and has not formed the basis for the award of any degree, diploma, associateship, fellowship, titles in this or any other University or other similar institution of higher learning.

**(SCHOLAR NAME)**

Place: Chennai  
Date:

**(Dr. ....)**

Supervisor

## **ANNEXURE IV**

### **ACKNOWLEDGEMENT**

*First and foremost, I would like to thank the **Almighty** for showering his blessings, wisdom, physical and mental strength on me to complete the research work.*

*I sincerely thank **Dr.(Mrs.) Elizabeth Verghese**, Chancellor, **Dr. Anand Jacob Verghese**, Pro Chancellor, **Mr. Ashok Verghese**, Director and **Dr. Aby Sam**, Director for providing me with an opportunity to do research in this esteemed institution.*

*I wish to express my sincere thanks to Vice Chancellor, Pro Vice- Chancellor, Registrar Controller of Examinations, Director (Research) and Dean (Research), Hindustan Institute of Technology and Science, Chennai, for their guidance and support.*

*Then as you wish*

**SCHOLAR NAME**

# ANNEXURE V

## TABLE OF CONTENTS

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**LIST OF TABLES**

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