**GUIDELINES FOR MTECH THESIS/MSc PROJECT**

**PREPARATION**



DEPARTMENT NAME

NATIONAL INSTITUTE OF TECHNOLOGY MANIPUR, IMPHAL 795004

**GUIDELINES FOR MTECH THESIS/MSc PROJECT PREPARATION**

**Introduction**

This document is intended to provide a set of specific and uniform guidelines to the MTECH/MSc in the preparation of the thesis/project. The research content of the thesis/project, which is being submitted to the Institute for the award of the degree of Master of Technology/Science, is of paramount importance. It is also imperative that the thesis/project, to be acceptable by the Institute, should essentially meet a uniform format emphasizing readability, concordance with ethical standards and Institute wide homogeneity.

**CHAPTER 1**

**THESIS/PROJECT LAYOUT**

The thesis/project has to be organised in the following order.

1. Cover Page

2. Inside Title Page

3. Dedications (if any)

4. Certificate signed by the Supervisor(s) (in the stipulated format)

5. Declaration signed by the Candidate (in the stipulated format)

6. Acknowledgements

7. Abstract

8. Table of Contents

9. List of Figures

10. List of Tables

11. Abbreviations (if any)

12. Notations (if any)

13. Nomenclature (if any)

14. Text of the Thesis/Project

Chapter 1

Chapter 2

…..

…..

15. Bibliographies

16. Appendices (if any)

17. List of Publications based on the Thesis/project

18. Non-paper materials (if any)

The formats to be followed for various headings are as follows

**1. COVER PAGE:** See sample sheet 1. The content, relative font size and locations of various items in the page should match with those given in sample sheet for evaluation copies of the thesis/project. For archival hard bounded copies of the thesis/project, the instructions given in 2.15.2 should be followed.

**2. INSIDE TITLE PAGE:** See sample sheet 2. The content, relative font size and locations of various items in the page should match with those given in sample sheet 2.

**3. DEDICATION:** (if any) should not exceed one page. Choose your font

**4. CERTIFICATE:** See sample sheet 3. The content, relative font size and locations of various items in the page should match with those given in sample sheet 3.

**5. DECLARATION:** See sample sheet 4. The content, relative font size and locations of various items in the page should match with those given in sample sheet 4.

**6. ACKNOWLEDGEMENTS:** See sample sheet 5. Should not exceed two pages.

**7. ABSTRACT:** See sample sheet 6. Should not exceed 3 pages

**8. TABLE OF CONTENTS:** See sample sheet 7.

**9. LIST OF FIGURES:** See sample sheet 9.

**10. LIST OF TABLES:** See sample sheet 10

**11. ABBREVIATIONS:** See sample sheet 11

**12. NOTATIONS:** See sample sheet 12

**13. NOMENCLATURE:** See sample sheet 13

**14. CHAPTERS:** See sample sheet 14

**15. REFERENCES:** To be provided immediately after the last chapter. See sample sheet 15

**16. APPENDICES:** See sample sheet 16

**17. LIST OF PUBLICATIONS BASED ON THE THESIS/PROJECT**

**18. NON-PAPER MATERIALS** (if any)

Each of the items - Inside cover page, Dedication, Certificate, Declaration, acknowledgements, Abstract, Table of Contents, List of Figures, List of Tables, Abbreviations, Notations, Nomenclature, each new Chapter, References, each new Appendix and the list of the Thesis/Project-based publications should start on an odd page i.e., on the right side.

**CHAPTER 2**

**THESIS/PROJECT PRODUCTION GUIDELINES**

**2.1. Thesis/PROJECT Size**

Ideally a thesis/project may contain 50 to 150 pages.

**2.2. Paper Size**

Use A4 size paper (210 mm wide and 297 mm long).

**2.3. Paper Quality**

White bond paper weighing 85 g/m2 or more should be used. Essentially the same quality of paper should be used throughout. Photographs or images with dense colors may be printed in double side on glossy paper.

**2.4. Margins**

A margin of 35 mm is to be provided on left and right sides, whereas top and bottom margins should be 30 mm**.** No print matter should appear in the margin except the page numbers. All page numbers should be centered inside the bottom margin, 20mm from the bottom edge of the paper.

**2.5. Font**

Times New Roman (TNR) 12 point font has to be used throughout the running text. The captions for tables and figures should have font size of 11 and foot notes should be set at font size 10. Font sizes for various levels of headings are given in section 2.7.

**2.6. Line Spacing**

The line spacing in the main text should be 1.5. Single line spacing should be given for quotations, abstract, figure captions, table captions, figure legends, footnotes, and references. The equations, tables, figures, and quotations should be set off from the main text both before and after with spacing of 1.5. Two consecutive paragraphs should be separated by triple line spacing.

**2.7. Headings**

Following format has to be followed in heading of chapters and sections.

Running text should be set in 12-point TNR and fully justified. First line of paragraph should have indentation of 15 mm.

**2.8. Table / Figure/ Equation Format**

Tables, figures and equations shall be numbered chapter-wise. If there are 15 figures in Chapter 3, then they are numbered from Figure 3.1 onwards upto Figure 3.15. For example, second figure of Chapter 3 will be numbered Figure 3.2 which may be placed in Section 3.4.3. The figure can be cited in the text as Fig.3.2 or Figure 3.2, however consistent citation format should be followed throughout the thesis/Project. Tables shall be numbered similarly (Table 2 in Chapter 3 will be numbered Table 3.2) and shall be cited in the text as Table 3.2. Figure caption shall be located below the figure. Table number and caption shall be located above the table. Equations are aligned to the centre of the page with equation number given at the end of the line within brackets as given below.

(2.1)

The equation should be referred in the text of thesis/project as Equation (2.1) or Eq. (2.1).

**2.9. Citing References**

**2.9.1. One author**

Monika (2007) developed this method of ……… Subsequently other researchers have adopted this technique (Ramakrishna, 2009; Bhaskar, 2010).

**2.9.2. Two authors**

Monika and Ram (2008) developed the model of …….. Subsequently other researchers adopted this technique (Ramakrishna, 2009; Rao and Ram 2011)

**2.9.3. Multiple authors & more than one publication in a year**

“Ram et al. (2005a) has designed the model …..” when given in sentence.

“Model AAB could regulate the control unit more efficiently (Ram et al., 2005b) ….” while given in brackets

**2.9.4. Citing multiple references**

When many authors are cited in sentence it is given as “………..Similar work was also proposed by Singh and Robin (2008); Ram et al. (2009); Prakash (2011)…..” “Similar work was demonstrated for varied data set by many researchers (Singh and Robin, 2008; Ram et al., 2009; Prakash, 2011)…..”

**2.10. Listing of the References**

References are to be listed after last chapter. They are to be listed in alphabetical order and numbered. Within a reference the line spacing should be single. Each reference should be separated by one blank line. The reference number should be left aligned. The text of the reference should have an indentation of 10 mm. The reference format to be followed for journal articles, text books, conference proceedings etc. are given below.

**2.10.1. Journals**

1. Prakas, K. (2011). Feedback and optimal sensitivity: Model reference transformations, multiplicative seminorms, and approximate inverses. *IEEE Transactions on Automatic Control*, 26(2): 301–320.

2. Ram, R., Krishna, S. and Peter, K. (2005a). Risk sensitive estimation and a differential game. *IEEE Transactions on Automatic Control*, 39(9): 1914– 1918.

3. Ram, R., Krishna, S. and Peter, K. (2005b). Differential rectification using control points. *IEEE Transactions on Geoscience and Remote sensing*, 55: 914 – 918.

4. Ram, R., Krishnamurthy, P., Prasad, N. and Peter, K. (2009). Risk sensitive estimation model II. *IEEE Transactions on Automatic Control*, 43(15): 355 - 363.

**2.10.2. Text books**

1. Myers, D. G. (2007). *Psychology* (1st Canadian ed.). Worth: New York. 2. Robin, R. (2008). *Robust Statistics*. Wiley-Interscience: New York.

**2.10.3. Conference proceedings**

1. Payne, D.B. and Gunhold, H.G. (1986). Digital sundials and broadband technology, In *Proc. IOOC-ECOC,* 1986, pp. 557-998.

2. Singh, K. and Robin, R. (2008). A linear- quadratic game approach to estimation and smoothing. In *American Control Conference,* New York. June 20 – 25, 2008, pp. 2818–2822.

**2.10.4. Reports**

1. Milton, M and Robert, L. (2004). Atmospheric carbon emission through genetic algorithm, *Environment and Technical Report No.3.*, Indian Meteorological Department., New Delhi.

**2.10.5. Online journals with a DOI (Digital Object Identifier)**

1. Krebs, D.L. and Denton, K. (2006). Explanatory limitations of cognitive developmental

approaches to morality. *Psychological Review,* 113(3): 672- 675. doi: 10.1037/0033-295X.113.3.672

**2.10.6. Online journals without a DOI**

1. Vicki, G.T., Thomae, M., Cullen, A. and Fernandez, H. (2007). Modeling the hydrological impact on Tropical Forests. *Forest Ecology,* 13(10): 122-132. Retrieved from http://www.uiowa.edu/~grpproc/crisp/crisp.html

**2.10.7. Online abstracts**

1. Perilloux, C. and Buss, D.M. (2008). Human relationships: Costs experienced and coping strategies deployed. *Evolutionary Psychology,* 6(1): 164-181. Abstract retrieved from http://www.epjournal.net

**2.10.8. Online books**

1. Perfect, T.J. and Schwartz, B. L. (Eds.) (2002). *Applied metacognition*. Retrieved from http://www.questia.com/read/107598848(--If DOI is available, use the DOI instead of a URL)

**2.10.9. Chapters from a book**

1. Krebs, D.L. and Denton, K. (1997). Social illusions and self deception: The evolution of biases in person perception. In J. A. Simpson & D. T. Kenrick (Eds.), *Evolutionary social psychology* (pp.21-48). Hillsdale, NJ: Erlbaum.

**2.10.10. Books in print form**

1. Snyder, C.R., Higgins, R.L. and Stucky, R.J. (Eds.). (1983). *Excuses:Masquerades in search of grace*. New York, NY: John Wiley & Sons.

**2.10.11. Dissertations, Project and Thesis**

1. Mack, S. (2000). “Desperate Optimism” M.S. Thesis, University of Calgary, Canada.

**2.11. MLA and APA Style Formats**

Notwithstanding the guidelines given in sections 2.9 and 2.10 candidates in humanities area can use either MLA style (published by Modern Language Association) or APA style (published by American Psychological Association) while citing and listing references as appropriate for their research discipline.

**2.12. Page Numbering**

Page numbers for the prefacing materials (Inside title page, dedication, certificate, declaration, acknowledgements, abstract, table of contents, etc.) of the thesis/project shall be in small Roman numerals and should be centered at the bottom of the pages. The numbering of the prefacing material starts from the Inside Title Page. However, the number is not printed on the Inside Title Page. Each new item of the prefacing materials listed above should start on a fresh paper on right page. If the content of one of the prefacing materials exceeds one page, it has to be printed on both sides of the paper by starting from the right side page. For example, if the item ‘Table of Contents’ extends for 5 pages, its first page should be printed on a fresh paper on right side page with second page of the ‘Table of Contents’ on the back of the paper and then continued. The page numbers of the prefacing material will be printed in small Roman numerals continuously counting blank pages also. However, the numbers are not printed on the blank pages.

The body of the thesis/project starting from Chapter 1 should be paginated in Arabic numerals and should be centered at the bottom of the pages. The pagination should start with the first page of Chapter 1 and should continue throughout rest of the thesis/project. Each side of a sheet of paper should be counted as a separate page, even if the back side of a sheet of paper is blank. The odd numbered pages are always on the right and even-numbered pages are always on the left. If the end of a chapter is in odd page (right side page) the next chapter should start on odd page i.e., on a fresh paper, and should be numbered as odd only by counting the blank even page also. However, the page number is not printed on the blank pages.

**2.13. Printing**

Printing of all material in general should be double –sided in black ink with exceptions as indicated in sections 2.3 and 2.12.

**2.14. Non-Paper Material**

A thesis/project may contain non-paper material, such as CDs and DVDs, if necessary. They have to be accommodated in a closed pocket in the back cover page of the thesis/project. The inclusion of non-paper materials must be indicated in the Table of Contents. All non-paper materials must have a label each clearly indicating the name of the candidate, student code number and the date of submission.

**2.15. Binding**

The copies of the thesis/project should be bound for evaluation and archival purposes in the formats stipulated below.

**2.15.1. Evaluation copies**

Thesis/project copies to be submitted for evaluation are to be soft bounded. The cover page should be printed on glossy white card of 300 g/m2or above.

**2.15.2. Archival copies**

The final copies submitted for archiving should be hard bound (case binding) with white rexin wrapping and text of cover page should be printed in golden letters. These copies should have the title of the thesis/project, the name of the student and the year of submission and the letters NITMN printed on the spines. It is not necessary to print the Institute logo on the cover page of Archival copies. These copies should include the corrections suggested by the examiners (if any) and a letter of approval from the competent authority.

**2.16. Electronic Copy**

An electronic version of the thesis/project should be submitted in CD or DVD along with the copies for evaluation as well as archival copies. The CD should be clearly labeled with name of the candidate, student enrolment number, title of the thesis/project and date of submission.

**Sample 1**

**THESIS/PROJECT TITLE – COVER PAGE FORMAT**

**FOR HARD BOUND COPY**

***A Thesis/Project submitted***

***in partial fulfillment for the Degree of***

**Master of Technology/Master of Science**

(CE/CS/ME/EC/EE/Ph/Ch/Ma)

***by***

**NAME OF THE CANDIDATE**

**Department Name**

**NATIONAL INSTITUTE OF TECHNOLOGY MANIPUR**

**IMPHAL**

**MONTH, YEAR**

**THESIS/PROJECT TITLE – COVER PAGE FORMAT**

**FOR SOFT BOUND COPY AND INSIDE**

**TITLE PAGE**

***A Thesis/Project submitted***

***in partial fulfillment for the Degree of***

**Master of Technology/Master of Science**

**in**

**Civil/Computer Science & Engineering/Mechanical/Electrical/Electronics & Communication/Physics/Chemistry/Mathematics**

***by***

**NAME OF THE CANDIDATE**

****

**Department Name**

**NATIONAL INSTITUTE OF TECHNOLOGY MANIPUR**

**IMPHAL**

**MONTH, YEAR**

(The certificate is to be printed on the Institute Letter-Head)

**CERTIFICATE**

This is to certify that the thesis entitled [**Title of the Thesis/Project**] submitted by [**Name of the candidate**] to the National Institute of Technology Manipur, Imphal, in partial fulfillment for the award of the degree of **Master of Technology/Master of Science** in Civil / Computer Science & Engineering /Mechanical /Electrical/Electronics & Communication /Physics /Chemistry /Mathematicsis a *bona fide* record of thesis/project work carried out by him/her under my/our supervision. The contents of this thesis/project, in full or in parts, have not been submitted to any other Institution or University for the award of any degree or diploma.

[Signature] [Signature]

[Name of the supervisor] [Name of the co-supervisor]

Supervisor Co-Supervisor

Department of [Name of the department] Department of [Name of the department]

Imphal

[Month, Year]

(A typical Specimen of Declaration)

<Font Style Times New Roman, Font Size 14>

**DECLARATION**

I certify that

1. The work contained in this thesis/project is original and has been done by myself and the general supervision of my supervisor.
2. The work has not been submitted to any other institute for any degree or diploma.
3. Whenever I have used materials (data, theoretical analysis, results) from other sources, I have given due credit to them by citing them in the text of the thesis/project and giving their details in the references.
4. Whenever I have quoted written materials from other sources, I have put them under quotation marks and given due credit to the sources by citing them and giving required details in the references.

Place: NIT Manipur <<Signature of the Scholar>>

Date: <<Name>>

<<Registration Number>>

**ACKNOWLEDGMENTS**

All acknowledgements to be included here. Please restrict to **one pages**.

The name of the candidate shall appear at the end, without signature.

I take this opportunity to thank Name of the Supervisor, NITMN and the classmates who helped in preparing this thesis/project.

I extend my sincere thanks to one and all of NITMN faculty for the completion of this document on the thesis/project format guidelines

[Name of the Candidate]

**ABSTRACT**

Abstract of the thesis/project to be given here. Please restrict to 1 page. NOTE: The abstract should not have any citations, or abbreviations, nor should it be divided into sections. It can be divided into number of paragraphs as the author wishes, but please avoid writing it as a single paragraph. It is advisable to avoid any equations in the Abstract. Figures and tables are to be avoided. Note that all paragraphs in the Abstract start with an indent of 15 mm, and there is no extra spacing between two successive paragraphs. The text should be Times New Roman font size 12, single spaced.

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Non-paper material

1. CD [Label] back cover of the thesis/project
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**ABBREVIATIONS**

Utmost care should be taken by MTech/MSc students while using technical abbreviations. The abbreviations should be listed in alphabetical order as shown below.

AFM Atomic Force Microscopy

BBB Blood Brain Barrier

CNT Carbon Nanotube

**NOTATIONS**

MTech/MSc students should explain the meaning of special symbols and nomenclature used in the thesis/project. Some examples are provided below.

|x| - absolute value of x

μ - mean

logn(x) - logarithm (x) to the base n

**NOMENCLATURE**

MTech/MSc should explain the nomenclature (if any) used in the thesis/project.

*Chemical nomenclature*

NH4 + - ammonium

CH4 - methane

OH- - hydroxide

SO42- - sulphate

*Biological nomenclature*

*Soneratia apetalla* - saline tolerant mangrove species

*Oryza sativa* - common rice

**CHAPTER 1**

**MANAGEMENT OF GREEN HOUSE GASES**

1. **Introduction**

The green houses gases are receiving so much of attention these days from the scientific community. The careful management of these gases is a serious research problem. Recently, Attanas and Monica (2012) reported the hazards associated with the mismanagement of these gases. Table 1.1 lists the percentage distribution of the gases. The studies related to the management of these systems need to follow a unified approach as suggested by earlier workers (Ram et al., 2005a; Ram et al., 2005b). However reports from Gurudeep and Mahin (2009) indicate the permissible level of green house gases1.

Table 1.1 Title of the table (Times New Roman 11)

|  |  |  |  |
| --- | --- | --- | --- |
| Aa | Bb | C | D |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

aA is admonishment coefficient of total population (Times New Roman 10)

bB is Bombardment coefficient of the mean population (Times New Roman 10)

-------------------------------------------------------------

1Adapted from Monika and Ram, 2008 (Times New Roman 10)

1

The satellite image as given in Figure 1.1 shows the area from where samples are collected.



Figure 1.1 Title of the figure (Times New Roman 11)

**Biblilographies**

1. Attanas, D.B. and Monica, H.G. (2012). Effects of green house gases, In *Proc. IOOC-*

*ECOC*, pp. 557-998.

2. Gurudeep, P.R. and Mahin, P. (2009). Risk sensitive estimation model II. *IEEE*

*Transactions on Automatic Control*, 43 (15): 355 - 363.

3. Prakas, K. (2011). Feedback and optimal sensitivity: Model reference transformations,

multiplicative seminorms, and approximate inverses. *IEEE Transactions on Automatic*

*Control*, 26(2): 301–320

4. Ram, R., Krishna, S. and Peter, K. (2005a). Risk sensitive estimation and a differential

game. *IEEE Transactions on Automatic Control*, 39(9): 1914– 1918.

5. Ram, R., Krishna, S and Peter, K. (2005b). Differential rectification using control points.

*IEEE Transactions on Geoscience and Remote sensing*, 55: 914 – 918.

6. Singh, K. and Robin, R. (2008). A linear- quadratic game approach to estimation and

smoothing. In *American Control Conference,* New York. June 20 – 25, 2008, pp. 2818–

2822.

**APPENDIX 1**

**LIST OF RESPONDENTS TO THE SURVEY**

1. NITMN

1. IIT

2. JNU

3. NEHU

4. KU

5. CAU

6. Manipur University

7. IIT, Guwahati

8. IIT, Mumby

9. IIT Chennai

**LIST OF PUBLICATIONS BASED ON THE THESIS/PROJECT**

Format similar to the BIBLILOGRAPHIES has to be followed here also.