

TITLE OF THE PROJECT

Project Report

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- Red colour indicates instructions, which shall be followed strictly, and deleted before submitting the report.
- Text written in black shall be retained as such.

Submitted in partial fulfillment of the requirements for the award of the degree of

Bachelor of Technology
in
Mechanical Engineering

by

ABCD (Roll No.: **B05***ME**)
EFGH (Roll No.: **B05***ME**)
KLMN (Roll No.: **B05***ME**)

List all students & Roll no
(Preferably in alphabetical
order)



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Department of Mechanical Engineering
NATIONAL INSTITUTE OF TECHNOLOGY CALICUT

May 2009

CERTIFICATE

This is to certify that the report entitled “**TITLE OF THE PROJECT**” is a bonafide record of the **Project** done by **ABCD** (Roll No.: **B05***ME**), **EFGH** (Roll No.: **B05***ME**) and **KLMN** (Roll No.: **B05***ME**) under **my** supervision, in partial fulfillment of the requirements for the award of the degree of **Bachelor of Technology** in **Mechanical Engineering** from **National Institute of Technology Calicut**, and this work has not been submitted elsewhere for the award of a degree.

If there is more than one guide, put “our” instead of “my”

List all students & Roll no Separated by comas and “and” before the last person

तमसो मा ज्योतिर्गमय

If there is more than one guide, write side by side and provide space for HOD’s signature at the bottom

Provide the Name & designation of the guide.

Dr. IJKL

(Guide)

Asst. Professor

Dept. of Mechanical Engineering

Professor & Head

Dept. of Mechanical Engineering

Place : NIT Calicut

Date : 07 May 2009

Department seal

ACKNOWLEDGEMENT

- Students have the freedom to decide, whether acknowledgement is to be given or not. However, it is recommended to give acknowledgements according to the standard practice.
- It shall be a single page write-up in paragraph format containing a maximum of 200 words.
- Proper acknowledgement shall be given to any external agency, which has significantly contributed to the project (funding or by any other means).

Abcd

Efgh

Klmn

List the names of all students

Signature shall NOT be given.

ABSTRACT

- Abstract shall be a one page write-up giving the summary of the project.
- It shall be written in paragraph format (maximum 3 or 4 paragraphs) containing approximately 200 words.
- The abstract generally contains the significance of the work, objectives, methodology and the major findings.
- Keep in mind that, it is from the abstract, the reader decides about the relevance of the work to him, and whether to go ahead with reading the report.

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Provide appendices only if required. Computer codes developed for the project (if any), lengthy derivations, explanations/details of some already existing algorithms etc. are usually given in the form of appendices. As a general guideline, give the information, which does not naturally fit into the flow of presentation of the report, as an appendix.

Page number to be given from this page, in roman numbers (at bottom-center location)

LIST OF ABBREVIATIONS

COP	Coefficient of Performance
EDM	Electric Discharge Machining
FEA	Finite Element Analysis
FMS	Flexible Manufacturing System
PV	Photovoltaic
WJM	Water Jet Machining

Abbreviations shall be given in the alphabetical order. Give sufficient spacing between the abbreviation and its expanded form.

List of Abbreviations shall be included only if there are more than 3 abbreviations used in the report.

When it appears for the first time in the text of the report, the expanded form shall be given with the abbreviation in the parenthesis. *For example:* “Flexible Manufacturing Systems (FMS) are extensively used ...”

LIST OF SYMBOLS

δ	Variational Symbol
δ_{ij}	Kronecker Delta
η	Efficiency
σ	Normal stress (MPa)
Γ	Boundary of the domain of analysis
Ω	Electrical resistance (ohm)
n	Hardening exponent
q	Charge of an electron (1.6×10^{-19} C)
t	Time (s)
A	Diode ideality factor (1 to 5)
I_o	Output current (A)
K	Boltzmann constant (1.38×10^{-23} J/K)
T	Absolute temperature (K)
V_o	Output voltage (V)

Subscripts and Superscripts

${}^t X$	Quantity X evaluated at time t
${}^{t+\Delta t} X$	Quantity X evaluated at time $t + \Delta t$
A_{ij}	Row i and column j element of matrix/tensor A

Use the following order for listing: lower case Greek symbols, upper case Greek symbols, lower case English letters and upper case English letters. Each group should be arranged in alphabetic order.

Subscripts and Superscripts may be mentioned separately, if required, after giving a subheading: **Subscripts and Superscripts** (12 point, Bold, Title case)

Mention the numerical values (if any) and units (if any) in parenthesis as shown above.

The symbols here shall be modified as per requirement, even though some of them are shown in black colour.

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The general format for the figure/table number is “x.y”, where “x” is the chapter number and “y” is the serial number of the figure/table in that chapter.

Include the list of figures/tables, only if there are three or more figures/tables in the report.

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Continuous text of the report starts from here

CHAPTER 1

INTRODUCTION

- Generally every report starts with the chapter “INTRODUCTION”. It is usual to discuss the background of the problem including the motivation to do the project, detailed problem definition and structure of the report in this chapter.
- Review of literature for discussing the related work done earlier, could be a part of this chapter or a separate chapter.
- Sufficient background information shall be given in this chapter about the project.
- Further, there could be a section called introduction in other chapters.

1.1 INTRODUCTION

Electrical energy today constitutes about 30% of the total annual energy consumption on a worldwide basis [1]. This figure is expected to rise as oil supply for industrial uses...

All references are to be numbered serially, and given in the form [1] only

When authors' names are referred in text of the report, use the name of first author and “et al.” if there are three or more authors, with serial number in the list of reference in square brackets. If there are only two authors, give the names separated by “and”. For example, write like:

“Cook et al. [2] reported that...”

“Kikuchi and Oden [12] presented ...”

Page numbering using Arabic numerals (1, 2, 3 ...) starts here, and shall continue till the end of the report.

REFERENCES

- [1] Crisfield, M.A., “A Fast Incremental/Iterative Solution Procedure that Handles Snap Through,” *Computers and Structures*, Vol. 13, pp. 55-62, 1981.
- [2] Cook, R.D., Malkus, D.S., Plesha, M.E., and Witt, R.J., *Concepts and Applications of Finite Element Analysis*, 4th Edn., John Wiley & Sons (Asia) Pte. Ltd., Singapore, 2004.
- [3] Gresho, P.M., Lee, R.L., Chan, S.T., and Leone, J.M., Jr., “A Finite Element for Incompressible or Boussinesq Fluids,” in *Third International Conference on Finite Elements in Flow Problems* (D.H. Norrie, ed.), Banff, Alberta, Canada, pp. 204-215, 1980.
- [4] <http://www.doe.hov.org/FundamentalSeriesItemPowerQualityandHarmonics.htm>
(As on 23-3-07).

- Indicate references by number(s) in square brackets.
- All references cited in the text should be present in the list of references, and the list of references should contain those referred in the report only.
- Number the references (numbers in square brackets) in the list in the order in which they appear in the report
- In the reference list, the names of all authors shall be mentioned. Shortening the list of authors by using “et al.” shall not be done in the reference list.
- All the resources, from which information (like figures, equations, tables etc.) is obtained, shall be properly acknowledged by including in the reference list.
- In the above reference list, the first one is a reference to a journal paper, second is an example for reference to a book, third for a conference publication and fourth for a web page.

The text from here on is for instruction only. It shall be deleted from the report before submission, even though the text colour is black.

General Notes for the Project Report

Cover pages: The title of the thesis, author, department, month and year of submission along with the emblem of the Institute will be included on the first cover (*See sample – first page of this document - for details*). This may be made in special quality paper like plastic coated paper.

Inner cover: contents shall be same as that of the front cover, but on ordinary A4 size paper.

Report Format:

Single column format, and print only on one side of the paper.

Full justification of all texts, other than headings and titles.

Ensure that each new paragraph is clearly indicated with an additional spacing.

Use a line spacing of 1.5 throughout, for texts. Ensure that each new section heading is separated by an additional spacing.

Chapter/section headings shall be as per the font size shown below. All chapters are to be started on a fresh page.

Table 1: Suggested Font sizes in Mini Project Report

Details	Font Type	Font size	Spacing
<i>Facing page (cover and first page)</i>	Times New Roman	Exactly follow the format given in the sample page (<i>First page of this document</i>)	
<i>Chapter headings with chapter number on top</i>	TIMES NEW ROMAN	14pt bold Upper Case	Centered
<i>Section headings</i>	TIMES NEW ROMAN	12pt bold Upper Case	Left justified
<i>Subsection headings</i>	Times New Roman	12pt. Bold Title case	Left justified
<i>All other lower level headings</i>	<i>Times New Roman</i>	12pt. Bold Italics Title case	Left justified
<i>Body of thesis</i>	Times New Roman	12 pt	Adjusted on both left and right and with 1.5 spacing for text and double spacing for equations
<i>Margins</i>	Left Margin	1.5 inch	To accommodate binding area
	Right Margin	1.25 inch	
	Top	2.0 inch	Pages on which a chapter begins
		1.0 inch	Other pages
Bottom	1.25 inch		

The preliminary pages are numbered in *roman numerals* (i, ii, etc). The first page of the chapter 1 onwards shall be numbered in *Arabic numerals* (1, 2, 3, etc).

Follow internationally accepted symbols, rules and conventions: use the international system of units (SI). If other quantities are mentioned, give their equivalent in SI.

Number consecutively any equations that have to be displayed separately from the text. Use standard software like "Equation Editor" for writing the equations. Centralize the equations and right justify the equation numbers. For example, the first equation in chapter 3 shall be written as:

$$\frac{\partial}{\partial x}\left(k \frac{\partial \phi}{\partial x}\right) + \frac{\partial}{\partial y}\left(k \frac{\partial \phi}{\partial y}\right) + Q = 0 \quad (3.1)$$

It shall be referred in the text as Eq. (3.1).

Tables shall be numbered consecutively in each chapter, and given suitable captions **above the table** (*Example*: Table 2.2: Comparison of Costs), and shall be referred in the text as Table 2.2.

Tables should not duplicate results presented elsewhere in the manuscript (for example, in graphs). Footnotes to tables should be typed below the table and should be referred to by superscript lowercase letters.

Graphs/plots shall be clear with axes information and number (*Example*: Fig. 2.2: Variation of Temperature in a Typical Day) consecutively, and given suitable captions **below the plot/graph**. Referred in the text as Fig. 2.2

Figure axis labels are often a source of confusion. Try to use words rather than symbols. As an example, write the quantity "Magnetization," or "Magnetization, *M*," not just "*M*." Put units in parentheses. Do not label axes only with units.

Copy paste or import from the simulated sheets of software packages will not produce clear graphs/plots, and shall not be produced in the thesis.

Colour illustrations and photos are allowed, only if clear and necessary for understanding. Same shall also be numbered and titled at the bottom. Photos shall be pasted on a separate page covered by a protection film.

All figures and tables must be in place in the text near, but not before, where they are first referenced. Figures and tables, including the title, shall be centralized.

If there are some appendices, these can be numbered as Appendix I, Appendix II, etc. The equations/figures/tables etc. in the appendices shall be numbered as serially in each appendix, by prefixing A-I, A-II etc. (*Example*: Fig. A-I 2, Table A-II 1, A-II 3 referred in the text as Eq. A-II 3).

All reports shall be soft bound only with plastic laminated cover.

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