



SCHOOL OF MECHANICAL ENGINEERING
DEPARTMENT OF MANUFACTURING ENGINEERING
B.Tech Mechanical Engineering or B.Tech Production and Industrial Engineering

GUIDELINES FOR PREPARATION OF PROJECT REVIEW REPORT / THESIS

The project report or thesis shall address, in an organized and scholarly fashion, significant contribution of the research work of the candidate(s) leading to the innovative outcomes in terms of design, manufacturing techniques or correlation of facts already known (analytical, experimental, design, hardware oriented etc.) and signifying a quality as to make a definite contribution to the advancement of knowledge. The following guidelines shall be followed in the preparation of the Report/Thesis.

The interim report submitted at the end of First/second Review will be termed as “**REVIEW REPORT**” and that submitted on completion of the work at the end of Project Phase will be represented as “**THESIS**”. Candidates shall submit a typed copy of the manuscript to the Supervisor for the purpose of approval. The manuscript shall also be prepared in accordance with these guidelines.

Sl. No.	Item	Guidelines
A.	Number of copies to be submitted	(N+3) copies+ One soft copy on CD in <i>pdf</i> format + One A3 poster – Final Review (One copy of the report to be submitted for First and Second Review)
B.	Size of thesis (typed matter reckoned from the first page of Chapter 1 to the last page including the list of References)	First/Second Review Report – Max. 25 Pages Final Thesis / Report – Max. 40- 80 pages
C.	Cover Page and Title page	As per the format
D.	Thesis/Report size	(290 mm x 205 mm) after Trimming.
E.	Page margins (Tables and Figures should also conform to the margin specifications)	Top edge : 30 to 35 mm Bottom edge : 25 to 30 mm Left side : 35 to 40 mm Right side : 20 to 25 mm
F.	The content shall be in the following order: The sequence in which the project report material should be arranged and bound should be as follows: <ol style="list-style-type: none">1. Cover Page & Title Page2. Dedication page (optional)3. Declaration by the Candidate4. Bonafide Certificate5. Certificate by External Guide (Applicable for students doing project outside VIT)6. Acknowledgement	

	7. Table of Contents 8. Abstract 9. List of Tables 10. List of Figures 11. List of Symbols, Abbreviations and Nomenclature 12. Chapters of the Report 13. Appendices 14. References
G.	COVER PAGE AND TITLE PAGE Title should accurately yet succinctly describe the nature of the proposed study. As per the format given in Appendix 1 .
H.	DECLARATION BY THE CANDIDATE As per the format given in Appendix 2 .
I.	BONAFIDE CERTIFICATE: The Certificate shall be in one and half line spacing using Font Style: Times New Roman and Font Size: 14, as per the format in Appendix 3 . In case of projects from companies, additional Certificate as per the format given in Appendix 4 is to be included
J.	ACKNOWLEDGEMENT Not exceeding one page when typed in 1.5 spacing. In the “Acknowledgement” page, the student recognizes his indebtedness for guidance and assistance of the project adviser and other members of the faculty. Courtesy demands that he / she also recognizes specific contributions by other persons or institutions such as libraries and research foundations. Sometimes the nature of the contribution is described (For example, permission for the use of equipment, facilities and documents). Acknowledgement should be expressed simply, tastefully, and tactfully. The format is given Appendix 5 .
K.	ABSTRACT/EXECUTIVE SUMMARY: Abstract should be one to one and a half page synopsis of the project report typed double line spacing, Font Style: Times New Roman and Font Size: 14. The abstract is a very brief summary of the report’s contents. The 500-800 word statement should describe the problem addressed by your project, a description of the work completed and a summary of any findings or lessons learned. It can also contain the following in varying amounts of detail as is appropriate: main motivation, main design point, essential difference from previous work, methodology and some eye-catching results if any, and main summary of results.
L.	TABLE OF CONTENTS: The table of contents should list all material following it as well as any material which precedes it. The title page and Certificate will not find a place among the items listed in the Table of Contents but the page numbers of which are in lower case Roman letters. One and a half spacing should be adopted for typing the matter under this head. A specimen copy of the table of contents of the project report is given in Appendix 6 .

M.	LIST OF TABLES: The list should use exactly the same captions as they appear above the tables in the text. One and a half line spacing should be adopted for typing the matter under this head. Specimen copy of List of Tables is represented in Appendix 7
N.	LIST OF FIGURES: The list should use exactly the same captions as they appear below the figures in the text. One and a half line spacing should be adopted for typing the matter under this head. A sample is presented in Appendix-8.
O.	LIST OF SYMBOLS AND ABBREVIATIONS: in alphabetical order. A sample is presented in Appendix-9.

	Page Numbers: To be given serially for all pages, including those with Figures and Tables, alone typed without punctuation on the middle of the bottom. Preliminary pages (such as Title page, Acknowledgement, Table of Contents etc.) should be numbered in lower case Roman numerals.
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PROJECT/THESIS CONTENT

Chapter	Guidelines
CHAPTER 1	<p>INTRODUCTION AND LITERATURE REVIEW:</p> <p>The introduction is a shorter version of the rest of the report, and in many cases the rest of the report can also have the same flow that summarizes the major contributions of the project. The chapter should provide a critical and concise outline of the subject to be covered by the dissertation and indicate how this study will contribute to the subject. This chapter should include the descriptions such as: (not necessarily in that order, but what is given below is a logical order). A thorough review of the literature with respect to the chosen field should be projected. Should include earlier and current reports along with author citation and year. In other words it should be a collection and a record of past and recent work. Summarize major contributions of significant studies and articles related to your field under review, maintaining the focus established in the introduction. Evaluate current “state of art”. Point out major gaps, inconsistencies in theory and findings. Conclude by providing some insight into the relationship between the central topic of the literature review and the areas / issues pertinent to future study.</p> <ul style="list-style-type: none"> • Background [The setting of the scene of the problem]. • Problem Statement [Exact problem you are trying to solve]. • Motivation [Importance of the problem]. • Post/Related work [Existing methods including pros and cons of the methods should be cited wherever possible]. • Challenges [Difficulty in the problem solving]. • Essence of your approach [Your method of problem solving]. • Statement of assumptions [The conditions under which your solution is applicable]. • Organization of the report. • Aim(s) and Objective(s)
CHAPTER 2	<p>METHODOLOGY AND EXPERIMENTAL WORK</p> <p>Description of “how the project was carried out?” including the experimental setup, the methods of sampling and measurement, modeling, field work, materials, analytical techniques.</p> <p>Design of the System:</p> <p>This chapter should describe the engineering specifications and targets critically evaluating the existing benchmarks and specifically identifying the gaps which the project is intended to fill; It should show how the concepts evolved and were evaluated also should describe and justify the formation of the final product/solution.</p> <p>Implementation of System/ Methodology:</p> <p>This chapter should reflect development of the project such as: implementation, experimentation, optimization, evaluation etc. and unit</p>

	<p>integration testing should be discussed in detail.</p> <p>In case of simulation, modeling, programming techniques, programming steps, flow-charts, simulation results, verification of the approach followed and the like depending on the nature of the project.</p> <p>The materials required, techniques followed, sample preparations, research design and methods should be clearly mentioned. The experimental procedure should be clearly defined.</p>
CHAPTER 3	<p>RESULTS AND DISCUSSION</p> <p>This is part of the set of technical sections, and is usually a separate section for experimental/design papers. This chapter should include:</p> <ul style="list-style-type: none"> • Performance metrics. • Parameters under study • Comparison of cases/ studies with respect to existing and proposed work / algorithm/ design–comparison/ with the published data and deviations / improvements if any as expected in the aims and objectives • Expected and obtained results- Analysis of the results- statistical analysis, plots, simulated results, synthesis of process, interpretation of the results • Detailed results for each logical component of the project with an accompanying discussion section [Can include screen shots, graphs etc.]. • The results can be tabulated, graphically presented and photographs to be displayed if any. • Discuss the results which should include an interpretation of the results and their relationship to the aims and objectives.
CHAPTER 4	<p>CONCLUSIONS</p> <p>This chapter should summarize the key aspects of your project (failures as well as successes) and should state the conclusions you have been able to draw. Outline what you would do if given more time (future work). Try to pinpoint any insights your project uncovered that might not have been obvious at the outset. Discuss the success of the approach you adopted and the academic objectives you achieved. Avoid meaningless conclusions, [e.g. NOT “I learnt a lot about C++ programming”]. Be realistic about potential future work. Avoid the dreaded: “All the objectives have been met and the project has been a complete success”. You have to crisply state the main take-away points from your work. Describe how your project is performed against planned outputs and performance targets. Identify the benefits from the project. Be careful to distinguish what you have done from what was there already. It is also a good idea to point out how much more is waiting to be done in relation to a specific problem, or give suggestions for improvement or extensions to what you have done.</p> <p><i>Future scope of the work for improvement may also be included</i> <i>Also it is expected to provide the major contributions from the project work to the end user. [It is mandatory to provide this information]</i></p>

REFERENCES

The listing of references should be typed 4 line spaces below the heading “REFERENCES” in alphabetical order in single line spacing and fully justified. The reference material should be listed in the alphabetical order of the first author.

Strictly adhere to the references format which should be arranged in the alphabetical order.

Journals :

M. Akesson and P.Nilsson. Seasonal changes of leachate production and quality from test cells, *Journal of Environmental Engg.* 123 (2007), 892-900.

Book/Book chapter

Sartaj Sahni. Data Structures, Algorithms and applications in C++, 2nd Edition, McGraw Hill, New York, (1998).

Conference Proceeding

D. Cai, X. He, Z. Li, Y. Ma, and J.R. Wen. Hierarchical Clustering of WWW Image Search Results Using Visual, Textual and Link Information, *Proceedings of the 12th annual ACM international conference on Multimedia*, New York, USA (2004) 952-959.

PUBLICATIONS

List the number of papers published in International / National Journals or Conference Proceedings

[Enclose the full length article published from the work]

APPENDIX – 1 [Remove the same while taking the print out]

(A typical specimen of cover page & title page)

TITLE OF THE PROJECT

 <1.5 line Spacing>

A PROJECT REPORT

Submitted in partial fulfillment for the award of the degree of

<Italic>

B.Tech

<Bold>

in

**Mechanical Engineering /
Production and Industrial Engineering**

by

 <Italic>

NAME OF THE CANDIDATE - Reg. No.

<Bold> - <Bold>

School of Mechanical Engineering

 <Bold>



VIT[®]

Vellore Institute of Technology

(Deemed to be University under section 3 of UGC Act, 1956)

 <Bold>

MONTH & YEAR

APPENDIX- 2 [Remove the same while taking the print out]

DECLARATION BY THE CANDIDATE

I hereby declare that the project report entitled “**TITLE OF THE PROJECT**” submitted by me to Vellore Institute of Technology University, Vellore in partial fulfillment of the requirement for the award of the degree of <**Name of the Degree**> in <**Branch Name**> is a record of bonafide project work carried out by me under the supervision of <**Name of the VIT Guide**>. I declare that this report represents my concepts written in my own words and where others' ideas or words have been included, I have adequately cited and referenced the original sources. I further declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed. Further I affirm that the contents of this report have not been submitted and will not be submitted either in part or in full, for the award of any other degree or diploma and the same is certified.

 <1.5 line spacing>

Place : Vellore

Signature of the Candidate(s)

Date:

APPENDIX-3 (A typical specimen of Bonafide Certificate) **[Remove the same while taking the print out]**



VIT[®]
Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

School of Mechanical Engineering

BONAFIDE CERTIFICATE

<underlined>

This is to certify that the project report entitled “**TITLE OF THE PROJECT**” submitted by <**STUDENT NAME**> (<**Reg. No.**>) to Vellore Institute of Technology University, Vellore, in partial fulfillment of the requirement for the award of the degree of <**Name of the degree**> in <**branch name**> is a record of bona fide work carried out by him/her under my guidance. The project fulfills the requirements as per the regulations of this institute and in my opinion meets the necessary standards for submission. The contents of this report have not been submitted and will not be submitted either in part or in full, for the award of any other degree or diploma and the same is certified.

Project Coordinator

Project Supervisor

Head of the Department

External Examiner

APPENDIX-4 [Remove the same while taking the print out]

<It should be in the Company Letter Head>

<Date:>

CERTIFICATE BY THE EXTERNAL SUPERVISOR

This is to certify that the project report entitled “**TITLE OF THE PROJECT**” submitted by <**STUDENT NAME**> (<**Reg. No.**>) to Vellore Institute of Technology University, Vellore in partial fulfillment of the requirement for the award of the degree of <Name of the degree> in <branch name> is a record of bona fide work carried out by him/her under my guidance. The project fulfills the requirements as per the regulations of this institute and in my opinion meets the necessary standards for submission. The contents of this report have not been submitted and will not be submitted either in part or in full, for the award of any other degree or diploma in this institute or any other institute or university. During the project internship, the attitude and the conduct of student is

_____.

<1.5 line spacing>

<Signature of the External Supervisor>

<Name>

EXTERNAL SUPERVISOR

<Title of the Supervisor >

<Full address of the Institution / organization with e-mail id, phone no.>

<Seal of the Institution / Organization>

APPENDIX-5 [Remove the same while taking the print out]

ACKNOWLEDGEMENT

<Underlined><Bold>

<Body>

Place : Vellore

Date :

<Signature of the Student>
(**Name of the Student**)

APPENDIX-6 [Remove the same while taking the print out]

(A typical specimen of table of contents)

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EXECUTIVE SUMMARY

More than two billion people worldwide rely on wood-based fuels for their daily energy needs, which can produce toxic atmospheric contaminants and cause environmental degradation. MIT D-Lab addresses this challenge with "Fuel from the Fields", a simple technique for making charcoal from agricultural waste. In this work, Thermogravimetric analysis combined with online mass spectrometry (**TGA-MS**) was used to study the pyrolysis of corn agricultural waste with the aim of improving understanding of the carbonization process. Non-isothermal mass loss data from **TGA** was obtained for three types of corn waste, cobs, husks, and stalks; and used to calculate proximate analysis in terms of moisture, volatile matter, and charcoal content. **TGA-MS** data for the three materials was used to understand the emissions of H_2O , CO , H_2S and C_4H_2 as a function of temperature. Activation energy, E_a , and pre-exponential factor, A , were calculated using the first order global single reaction model for corn cobs and husks. **TG-DTG** data suggested that corn cobs are better suited feedstocks for charcoal production. Mass Spectroscopy was found to successfully characterize emissions. For corn cobs, $A = 1.3 \cdot 10^4 s^{-1}$ and $E_a = 88.6 kJ/mol$, while for husks $A = 5.2 \cdot 10^4 s^{-1}$ and $E_a = 96.4 kJ/mol$. Based on this work, a carbonization burn timeline worksheet was created to aid monitoring of char yield in the field.

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LIST OF SYMBOLS AND ABBREVIATIONS

A	Amps
BOD	Biochemical Oxygen Demand
C	Celsius
cm	Centimetre
COD	Chemical Oxygen Demand
CETP	Common Effluent Treatment Plant
CRE	Conventional Reactive Effluent
cc	Cubic Centimetre
m ³	Cubicmetre
DEPA	Danish Environmental Protection Agency
d	Day
DIN	Deutsches Institut fur Normung
DC	Direct Current
ETP	Effluent Treatment Plant
EPA	Environmental Protection Agency
GAC	Granular Activated Carbon
g	Gram
h	Hour
IGEP	Indo – German Export Promotion
IPD	Institute for Product Development
kg	kilogram
kWh	kilo Watt hour
S	Kubelka – Munk Absorption Coefficient

CHAPTER 1

INTRODUCTION AND LITERATURE REVIEW

<Cap – 14 Bold, Times New Roman>

In this chapter, an attempt has been made to give an overview of dissimilar metal welding and the problems associated with dissimilar welding. This is followed by the introduction of Gas Tungsten Arc (GTA) and Pulsed Current Gas Tungsten Arc (PCGTA) welding processes and their compatibility of welding metals especially the weldability of XXXX and YYYY. A brief outline of the works carried out by the researchers by employing GTA and PCGTA welding techniques in various metals is also given which is followed by the importance of hot corrosion studies. Then the motivation of research, objectives and the thesis layout are discussed.

1.1 DISSIMILAR METAL WELDING <Cap – 12 Bold, Times New Roman>

Dissimilar Metal Welding (DMW) is one of the challenging and fascinating areas of research in the field of manufacturing, especially metal joining. A dissimilar metal weldment contains a weld deposit with a chemical composition that differs from the composition of either of two different metals which have been welded together. The joining of dissimilar metals is generally more challenging than that of similar metals, because of the difference in the physical, mechanical and metallurgical properties of the parent metals to be joined (Mohandas, 2005). These differences may also complicate the selection of filler metals compatible to both base metals. Therefore, filler metal selection is often compromised between the two dissimilar metals. There are a few constitution diagrams such as Schaeffler (1949) and Kotecki (1992) for similar and dissimilar metal joining and predicting the microstructure.