



DEVI AHILYA VISHWAVIDYALAYA, INDORE

GUIDELINES

For

Major Project Work / Internship

in

M.Tech. (Data Science)

M.Tech. (Big Data Analytics)

M.Tech. (Executive) Data Science

M.Sc. (Data Science and Analytics)

M.B.A. (Business Analytics)



SCHOOL OF DATA SCIENCE AND FORECASTING

TAKSHASHILA PARISAR, KHANDWA ROAD,

INDORE (M.P.)-452001

Guidelines

SCHOOL OF DATA SCIENCE AND FORECASTING

Major Project Work / Internship

1. Introduction

The project/ internship is an essential part of the curriculum of all academic programmes. The duration of project/ internship in M.Tech. programmes is of two semesters while in M.Sc./ M.B.A. it is of one semester. The project work is a student-driven project and does not involve regular classroom delivery and assessment (lectures, tutorials, final examinations etc). The credits of project/ internship are 12 per semester. The project/ internship course responds to the needs of industry in two broad ways – by providing students with a forum for engineering and management practices and by cultivating the values and ethics necessary for professional conduct at the workplace.

The projects are designed to develop skills in the following areas:

- Work with messy data, applying models, and understanding the business context.
- Work with unstructured data from various sources like video and social media.
- Use Data Visualization techniques.
- Write the programming codes in R and Python.
- Employ cutting edge tools and technologies to analyze Big Data.

It is expected that, in the completion of the project/ internship, students will use the wide range of knowledge and skills that they have gathered over the course of their post graduate programme. However, it is not unusual for a project to require students to rely on a body of knowledge outside of that taught in the programme. The project/ internship presents the opportunity to build upon a core of learning, gained in the earlier years, and to broaden the scope of that knowledge. Students are required to take **complete ownership of their project** and this necessitates a **considerable shift in attitude** as the project demands that, beyond the exercise of knowledge and skills, they must be **self-regulating** and **self-directed** in their time management and research, respectively.

2. Project Categories

Projects are classified into two (2) broad categories as summarized in Table 1. The project category **determines how the project will be evaluated**. It is essential that students should ascertain the category of their project before they begin.

Type Category Description

Table 1: Project Category

Type	Category	Description
I	Research ^a	Theoretical analysis leading to new knowledge. Requires extensive background preparation and comprehension of subject matter, clear thinking and sound logic.
II	System Development and Design ^b	System design and implementation requiring little knowledge outside of that obtained in the programme. This category focuses strongly on the application of expertise and knowledge gained.

* a - Presentation of research paper in a Conference and/or a journal is desirable.

b – Snapshots/picture of a working prototype or simulation results should support the design. Demonstration is mandatory for students doing project in the department.

The one year project can be taken up either in the department, in other educational/research institute of high repute or in leading Industries.

3. General Instructions

M.Tech project is divided into Phase – I and Phase –II viz.

Phase – I: July-Dec, 20XX

Phase – II: Jan-June, 20XX

1. In project Phase - I students have to necessarily submit project proposal in the format described in Section 4. **ONLY** upon the approval of the project by the department, student can pursue the project activities.
2. Students are required to send the monthly progress report in the format described in section 5 at every 10th Day of the Month (Starting from the month September)
3. Students may be called for Oral Presentation in the middle of Phase – I and Phase – II
4. At the end of Phase – I and Phase – II, students are required to appear for the project viva-voce at a date notified by the department.
5. Students are required to prepare a project report. Format is described in the Appendix III
 - a. Phase – I: soft bound report (one copy) and softcopy in CD. The report must contain monthly progress reports as appendix. The total pages should not exceed 80.
 - b. Phase – II: Hard bound report (two copies) and softcopy in CD. The report must contain monthly progress reports as appendix. Thesis for Phase –II should contain all the important activities, simulation, results etc carried out through out the year.
6. Students must submit
 - a. Completion certificate signed by both supervisors
 - b. No stipend certificate (if student gets stipend from department)
 - c. Copies of fee deposit bank challan, and original fee receipt/challan of all semesters.

4. Project Proposals

All project proposals (Synopsis) must be approved by the Department before they can be accepted. **Project proposals duly signed by supervisors (External/ Internal) must be submitted by 16th August each year.**

The proposal must clearly specify:

1. Project Details : Please refer Appendix – I (for cover page only)
2. Background (*what is the justification for the project?*)
3. The Scope of the project and Literature survey: the significance of the problem and solutions proposed or implemented by others
4. Project Objectives (what does the project seek to achieve or deliver?)
(Students are supposed to divide the whole project work in terms of different modules and also require the time for completing a particular module).
5. Project Implementation and Methodology (*the range of activities to complete the project*)
6. Details on how the problem is being addressed
7. Summary of Requirements:
8. Prerequisite skills and knowledge
9. General hardware requirements
10. General software requirements

If for any just reason any part of an approved proposal is to be modified, the revised proposal must receive the approval of the project supervisor and be submitted to the department for approval.

5. Progress Report (September Onwards)

In each semester, the progress reports are mandatory. You will be evaluated on your **understanding of the problem**, the **general requirements of the problem solution**, the **project management procedures** used and **preliminary results** obtained. Progress reports are to be sent on monthly basis by email to Head/Course coordinators. There shall be a midterm appraisal of the project every semester in which you may be called for a mid term oral presentation at a date notified to you by department. Feedback report on your achievement shall be sent back to you by email and grades obtained in the midterm appraisal shall be counted towards your final grading. Department shall contact your supervisor periodically to know about progress of the work.

The monthly progress report should include:

1. **The project title (title layout as per appendix 1(for cover page only))**
2. **Project category**
3. **Duration of the report**
4. **Problem statement for the duration**
5. **Plans for the completion of the solution**
6. **Preliminary results/Snapshots of the result**
7. **Details of problems encountered**

8. **Publication (if any)**
9. **Books/ Journals/ Webpages referenced**

6. **Ethics**

M Tech must not be regarded merely as a means toward the award of a degree. Rather, it must be thought of as **an opportunity for professional and personal development and achievement**. You are to spare no effort in **ensuring the integrity of your work**.

You are bound by the following research obligations:

- a. You must provide both **in-text and bibliographic citation**. Failure to do so will be taken as an attempt to plagiarize. Plagiarism is a grave offence under the regulations of the University and can attract severe penalties.
- b. **Authentic research data are to be presented**. Manipulation of results is regarded as a serious offence, whether it involves falsifying results or distorting them to fit expectations.

7. **Final Written Report**

Guidelines on the writing of the reports for Phase – I and Phase- II are provided in the Writing Manual (Appendix II).

In every semester, you have to face viva-voce for evaluation of 20 credits. In addition, **copy of the monthly progress reports is to be included** as an appendix in the final report. You are to submit

- a. **Phase – I:** The project report (1 copy) must be soft bound. A copy of it must be submitted on CD-ROM. The cover page should be printed in black letters and the text for printing should be identical. Monthly progress report must be attached as Appendix.
- b. **Phase – II :** The project report (2 copies) must be hard bound. A copy of it must be submitted on CD-ROM. The cover page should be printed in black letters and the text for printing should be identical. Monthly progress report must be attached as Appendix.

If you have bulky appendices and or programming code place these on a CD-ROM. Ensure that the items are accurately referred to within your body of work. The CD-ROM must be placed in a pocket at the back cover of the report. The CD cover should be superscribed with **Student identification, name, roll no**. **Every student submission made to the Department is subject to examination by an electronic plagiarism checker**. Student shall be required to sign a form indicating that your report does not involve any plagiarism or collusion and this form shall be attached in the report. Projects will not be considered complete without these forms. Students are not allowed to present any changes, addenda or new versions of their final reports after the deadline.

Students failing to comply with the deadline will be allocated zero marks for the entire project

8. Final Oral Presentation

Students are required to present a dissertation of your project as per schedule declared by department. These presentations are open to the public.

The duration of the examination is forty (40) minutes; student shall present in the first fifteen (15) minutes using presentation aids like multimedia (laptop and projector) equipment. Student shall be orally examined on various aspects of his/her project. This dissertation will be presented to a team comprised of External Examiner, Internal Examiner and Head of Department (moderator).

9. Evaluation

The project is evaluated across seven categories: conduct, understanding, comprehension, approach and methodology, results, report(s) and presentation. Each of these is assessed using one of eight letter grades from Fail (F) to Outstanding (O). From this ranking, final marks are calculated using weights determined by the project category.

Table 2: Project Evaluation Level

Grade	O	A+	A	B+	B	C	P	F
Grade Points	10	9	8	7	6	5	4	0
Descriptor	Outstanding	Excellent	Very Good	Good	Above Average	Average	Pass	Fail

Table 3: Quality Descriptors

Outstanding	The work is outstanding and there is no room for improvement in the given time frame.
Excellent	The work is deficient only in one or two relatively insignificant components and is overall of a much higher standard than that expected from a good student.
Very Good	The work is deficient only in one or two relatively insignificant components but is of a much higher overall standard than that expected from an average student.
Good	The work is deficient only in one or two significant components but is overall of a higher standard than that expected of an average student.
Above Average	The work could have been done better but is of an average standard. The engineering input is generally correct but the treatment lacks depth.
Average	The work is an average but still acceptable. There may be some analytical and design flaws but the work is retrievable.
Pass	The student needed to have put more effort into key aspect of the work. Its standard is low and deserves only a passing grade. In particular, there is very little evidence of engineering knowledge being applied here.
Fail	Student made absolutely no attempt at the aspect of work

Table 4: Project Category Weightings

	Conduct	Understanding	Approach	Results	Report(s)	Presentation
I. Research	10	30	20	15	15	10
II. Development/ Design	10	15	25	30	10	10

Table 5: Project Assessment Categories

Conduct	Regular attendance and Punctuality. Rigour and diligence at research material
Understanding and Comprehension	The background theory, its application and limitations
Approach and Methodology	Use of methods and approaches expected of a professional engineer, justification for selecting the methods used and evaluation of alternatives
Results	Provision of the deliverables-conclusions drawn, completeness of design and fabrication, quality of design, demonstration of results
Report(s)	Quality of reports, consistency, grammar and spelling, organization of sections, captioning of figures, tables and graphs
Presentation	Coverage of work done, effectiveness, answers to questions, use of presentation technology

10. Advice for the M Tech Students

The tips provided below are based on problems students have encountered in the past. It is hoped that by sharing these, students can avoid the pitfalls encountered by others. The most important thing to keep in mind regarding M Tech project is that it should be fun! You have to want to do it, enjoy doing it, and be proud you did it. Should this cease to be the case; you should seek help to get back on track. There is nothing worse than pursuing a project which is going nowhere; you will come to hate it, do a poor job, and feel badly about yourself.

1. Pin down your project definition within the first month of receiving the project. Use this time to determine the resources required to arrive at a satisfactory conclusion to your activities. This includes both human (**your time and required effort**) and material resources (**accessibility and availability of parts and components**).
2. A **comprehensive survey of relevant, scholarly literature** is essential to clarifying your project ideas. Reviewing literature also helps to identify what was done previously and so directs the new and original paths that you can take. During your intense and wide reading make sure to keep detailed notes, including bibliographic references, to which you can easily refer as the need arises.
3. Typically, students defer the bulk of their project till the second semester; this approach is characteristic of poor project management and is not at all advised. Instead, students should try to **work at a steady pace throughout the entire year**.

4. Your job will be made easier if the **project can be decomposed into a sequence of significant steps or milestones**. Your supervisor should verify these milestones as soon as they are achieved. With this approach you will have some definite results, if you are unfortunate enough to run out of time.
5. Also, note that *the department reserves the right to withheld/ deduct your scholarship if the performance is not found to be satisfactory.*

PROJECT DETAILS

SCHOOL OF DATA SCIENCE AND FORECASTING
DEVI AHILYA VISHWAVIDYALAYA, INDORE

"Title of the Project"

Category of Project; Research/System Development and design

<p>◆ Name of the supervisor : Dr. /Mr./Ms.</p> <ul style="list-style-type: none">○ Designation○ Highest Qualification○ Organization Address○ Email id	<p>◆ Name of the student</p> <ul style="list-style-type: none">○ Roll No. :○ Class:
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FORMAT FOR PREPARATION OF PROJECT REPORT FOR M.Tech.

Your final report will bear testimony to your academic achievement and professional development. Invest effort and care in the overall presentation of your report. Aim for a professional finish by adhering to the guidelines below.

- The project report thesis for phase2 viva-voce must contain all the important work carried out in project phase 1 and project phase2.
- Print your report on letter size white paper (A4).
- Student can use both side of the page for printing.
- No part of the report should be hand-written.
- Print an initial copy of your report and review for errors and formatting inconsistencies. Remember that actual print looks differently from your electronic version. When you are satisfied with your final product then proceed to print the copy for submission. Please note that a professional finish requires ample time for careful review. **DO NOT** leave your printing for the day of submission!
- The report should be no more than 80 pages (i.e. the main text, discounting appendices). Students must bring TWO hard bound copies along with a CD kept in a pocket at the back cover of the thesis. The CD should be superscripted with Student's name, roll no and title of the project

1. ARRANGEMENT OF CONTENTS:

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

1. Title Page
2. Certificates (Statement of Originality, Recommendation, Certificate & Acknowledgement)
3. Table of Contents
4. Abstract
5. List of Tables
6. List of Figures
7. List of Symbols, Abbreviations and Nomenclature
8. Chapters (Introduction , Literature Survey, Research Methodology, Data Collection ,Data Analysis, Result , Conclusion , Future Enhancement)
9. Appendices
10. References

The table and figures shall be introduced in the appropriate places.

2. PREPARATION FORMAT:

- 2.1 **Cover Page & Title Page** – A specimen copy of the Cover page & Title page of the project report are given in Appendix 3.
- 2.2 **Certificate** – The Certificate shall be in double line spacing using Font Style Times New Roman and Font Size 14, as per the format in Appendix 5.

The certificate shall carry the Guide's signature and shall be followed by the Guide's name, academic designation (not any other responsibilities of administrative nature), department and full address of the institution where the Guide has guided the student. The term 'SUPERVISOR' must be typed in capital letters between the Supervisor's name and academic designation.
- 2.3 **Abstract** – Abstract should be one page synopsis of the project report typed double line spacing, Font Style Times New Roman and Font Size 14.
- 2.4 **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 7.
- 2.5 **List of Tables** – 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.

- 2.6 **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. Include Figure Numbers e.g Figure 1, Figure 2 etc. Figure Description should follow the Figure Number. E.g Figure 1: Overall System Intergration Model
- 2.7 **List of Symbols, Abbreviations and Nomenclature** – One and a half spacing should be adopted or typing the matter under this head. Standard symbols, abbreviations etc. should be used.
- 2.8 **Chapters** – The chapters may be broadly divided into 3 parts (i) Introductory chapter, (ii) Chapters developing the main theme of the project work (iii) and Conclusion.

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.
- ❖ Footnotes should be used sparingly. They should be typed single space and placed directly underneath in the very same page, which refers to the material they annotate.

- 2.9 **Appendices** – Appendices are provided to give supplementary information, which is included in the main text may serve as a distraction and cloud the central theme.

- Appendices should be numbered using Arabic numerals, e.g. Appendix 2, Appendix 3, 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 made in the contents page also.

- 2.10 **List of References** –The listing of references should be typed 4 spaces below the heading “REFERENCES” in alphabetical order in single spacing left – justified. 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 year and other details.

A typical illustrative list given below relates to the citation example quoted above.

REFERENCES

1. Ariponnammal, S. and Natarajan, S. (1994) ‘*Transport Phenomena of Sm Sel – X Asx*’, Pramana – , Journal of Physics, Vol.42, No.1, pp.421-425.
2. Barnard, R.W. and Kellogg, C. (1980) ‘*Applications of Convolution Operators to Problems in Univalent Function Theory*’, Michigan Mach J., Vol.27, pp.81–94.
3. Shin, K.G. and Mckay, N.D. (1984) ‘*Open Loop Minimum Time Control of Mechanical Manipulations and its Applications*’, Proc.Amer.Contr.Conf., San Diego, CA, pp. 1231-1236.

2.10.1 Table and figures - By the word Table, is meant tabulated numerical data in the body of the project report as well as in the appendices. All other non-verbal materials used in the body of the project work and appendices such as charts, graphs, maps, photographs and diagrams may be designated as figures.

3. TYPING INSTRUCTIONS:

The impression on the typed copies should be black in color.

Color of Report	Black/Brown/blue/Gray
Word Processor	Microsoft Word
Page Size	A4 (8.27" x 11.69") with page number
Page Margin for all pages)	Top = 1 inch Bottom=1 inch Left =1.5 inch Right=1 inch
Font	Times New Roman
CHAPTER TITLE	16 pt. Bold & CAPITAL CASE
Font Size for Sub-Headings	12 pt. Bold & Title Case
Font size for Text	12 pt.
Line Space for Text	1.5 line space
Paragraph	6 pt. Space before and after paragraph & Alignment=Justify
Reference	Align= justify Line Space= single and 6 pt. space before the next reference.

* * * * *

(A typical Specimen of Cover Page & Title Page)

TITLE OF PROJECT REPORT

<1.5 line spacing>

A PROJECT REPORT

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

<1.5 line spacing><Italic-Bold>

MASTER OF TECHNOLOGY

in

BRANCH OF STUDY

Submitted by

<Italic-Bold>

NAME OF THE CANDIDATE

ROLL No

**EXTERNAL SUPERVISOR
NAME:**

Designation:

**INTERNAL SUPERVISOR
NAME:**

Designation:

SCHOOL OF DATA SCIENCE AND FORECASTING

(UNIVERSITY TEACHING DEPARTMENT)

DEVI AHILYA VISHWAVIDYALAYA

Indore (M.P)

MONTH & YEAR

[REFERENCE ONLY]

**SOME PERFORMANCE ASPECTS CONSIDERATIONS OF
A CLASS OF ARTIFICIAL NEURAL NETWORK**

A PROJECT REPORT

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

**MASTER OF TECHNOLOGY
in
SYSTEMS MANAGEMENT**

Submitted by
KAPIL SHARMA
FS/MT-SM/1204

EXTERNAL SUPERVISOR
NAME: Mr. N.K.Jain
Designation: General Manager

INTERNAL SUPERVISOR
NAME: Mr. Vandit Hedau
Designation: Lecturer

SCHOOL OF DATA SCIENCE AND FORECASTING
(UNIVERSITY TEACHING DEPARTMENT)

DEVI AHILYA VISHWAVIDYALAYA
Indore (M.P)

May, 20XX

(A typical specimen of Bonafide Certificate)

**SCHOOL OF DATA SCIENCE AND FORECASTING
DEVI AHILYA VISHWAVIDYALAYA
INDORE (M.P)**

STATEMENT OF ORIGINALITY

In accordance with the requirements for the Degree of Master of Technology in DATA SCIENCE/ BIG DATA ANALYTICS, in SCHOOL OF DATA SCIENCE AND FORECASTING, I present this report entitled --TITLE OF PROJECT--. This report is completed under the Supervision of:

NAME OF EXTERNAL SUPERVISOR--.

Designation & Affiliation:

NAME OF INTERNAL SUPERVISOR--.

Designation & Affiliation:

I declare that the work presented in the report is my/our own work except as acknowledged in the text and footnotes, and that to my knowledge this material has not been submitted either in whole or in part, for any other degree at this University or at any other such Institution.

(.....)

Name and Signature of the Student

Date:

(A typical specimen of Bonafide Certificate)

**SCHOOL OF DATA SCIENCE AND FORECASTING
DEVI AHILYA VISHWAVIDYALAYA
INDORE (M.P)**

RECOMMENDATION

This dissertation entitled **--TITLE OF PROJECT--** submitted by **----NAME OF Student--** towards the partial fulfillment of Degree of Master of Technology in Data Science/ Big Data Analytics of Devi Ahilya Vishwavidyalaya, Indore is a satisfactory account of his/her project work and is recommended for the award of degree.

External Supervisor

**Internal Supervisor
Department**

size -14>

Head of

<Font Style Times New Roman –

(A typical specimen of Bonafide Certificate)

**SCHOOL OF DATA SCIENCE AND FORECASTING
DEVI AHILYA VISHWAVIDYALAYA
INDORE (M.P)**

CERTIFICATE

This is to certify that the dissertation entitled “----[Project title](#)----” submitted by --
[Student Name](#) --- is approved for the award of Master of Technology in Data Science/
Big Data Analytics.

.

**INTERNAL EXAMINER
EXAMINER**

DATE:

< Times New Roman-Bold – size -12>
size -12>

EXTERNAL

DATE:

< Times New Roman-Bold –

ACKNOWLEDGEMENT

Name of the Student with Signature

(A typical specimen of table of contents)

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