



INSTITUTE OF AERONAUTICAL ENGINEERING

DUNDIGAL – 500 043, HYDERABAD

B.TECH PROJECT WORK GUIDELINES

1. PREAMBLE

These guidelines are intended to give both students and supervisor at IARE a set of procedures and expectations that will make the project work evaluation process easier, more predictable, and more successful. These guidelines should be interpreted as the minimum requirements of the degree awarded by JNTUH, Hyderabad. The project work committee assigned for various programmes offered by Institute of Aeronautical Engineering may add requirements or guidelines as deemed fit.

2. OBJECTIVE:

The main objective of the Project Work is for the students to learn and experience all the major phases and processes involved in solving “real life engineering problems”.

3. EXPECTED OUTCOME:

The major outcome of the B. Tech project must be well-trained students. More specifically students must have acquired:

- System integration skills
- Documentation skills
- Project management skills
- Problem solving skills

4. PROJECT WORK

The project work for B.Tech consists of Project Work Stage - I and Project Work Stage - II. Project Work Stage - I is to be undertaken during IV B.Tech I semester and Project Work Stage - II, which is generally a continuation of Project Work Stage - I and is to be undertaken during IV B.Tech II semester.

5. GENERAL SUGGESTIONS AND EXPECTATIONS

The Project Work is by far the most important single piece of work in the programme. It provides the opportunity for student to demonstrate independence and originality, to plan and organize a large Project over a long period and to put into practice some of the techniques student have been taught throughout the course. The students are advised to **choose a Project that involves a combination of sound background research, a solid implementation, or piece of theoretical work, and a thorough evaluation of the Project's output in both absolute and relative terms.** Interdisciplinary Project proposals and innovative Projects are encouraged and more appreciable.

It is good to try to think of the Project as a deliverable at reviews rather than an effort to deliver a fully-functioning 'product'. The **very best Projects invariable covers some new ground, e.g. by developing a complex application which does not already exist, or by enhancing some existing application or method to improve its functionality, performance etc.**

A straightforward implementation Project is acceptable, but student must appreciate that it is unlikely to gain high marks, regardless of how well it is done and its usage. Likewise, Projects which are predominantly survey reports, unless they are backed up with experimentation, implementation, on theoretical analysis, e.g. for performing an objective comparison of surveyed methods, techniques etc. pure survey reports with no supporting implementation or theory, are not acceptable.

- Undergraduate students are to decide on the Project Work Stage - I and Project Work Stage - II Project with their proposal and Project Supervisor during the month of **July/August** with a Synopsis consisting of about **three chapters** - **Introduction, Literature Review** and **Methodology** which should highlight the deliverables.

- In Case of re-reviews, any number of re-reviews can happen depending on the discretion of the committee and it should happen within the prescribed time.
- If the student fails to attend, the Supervisor refuses to endorse the student's work. The committee can invite Head of the Department who is empowered to resolve among further matters.
- If the work of the candidate is found to *be insufficient and plagiarism*, the committee and Head of the Department will decide the further process.
- Head of the Department can initiate further steps to ensure the smooth implementation as deems appropriate of guidelines.

6. CHOOSING THE RIGHT PROJECT:

The idea for student's Project may be a proposal from a faculty member or student's own, or perhaps a combination of the two.

The Projects offered by faculty member may vary substantially in breadth, depth and degree of difficulty. The most important thing is to shortlist a set of Projects that are right for student. Some students are better suited to well-defined and relatively safe Projects that provide scope for demonstrating proficiency with a low risk of failure. Other students are better advised to tackle harder, riskier Projects that require a high degree of original input and/or technical problem solving.

The potential Supervisors will be happy to offer advice on the suitability of a Project, given student's individual background, strengths and ambitions. Remember that it is important to balance ambition and realism when making a choice. For better help of Projects student can search from websites like (IEEE, ACM, Elsevier, Springer, etc...)

All B. Tech projects are to be done in the Institute. For industry specified projects, students will be permitted to spend 1-2 weeks in the industry on recommendation by the supervisor. The number of students per batch should be 4.

7. WHO WILL EVALUATE?

The End Semester evaluation shall be based on the report submitted and a viva-voce exam for 150 marks by committee comprising of the head of the department, project supervisor and an external examiner.

8. ASSESSMENT OF THE PROJECT WORK

- The project work shall be evaluated for 200 marks out of which 50 marks for internal evaluation and 150 marks for end-semester evaluation. The project work shall be spread over in IV B.Tech I semester and IV B.Tech II semester. The project work shall be somewhat innovative in nature, exploring the research bent of mind of the student. A project batch shall comprise of not more than four students.

The project work shall be evaluated for 200 marks out of which 50 marks for internal evaluation and 150 marks for end-semester evaluation. The evaluation shall be done on the following basis

Semester VII	Semester VIII
Preliminary Evaluation: 10 marks	Design Evaluation - II: 25 marks
Design Evaluation - I: 15 marks	End - Semester Evaluation: 150 marks

DISTRIBUTION OF MARKS FOR B.TECH PROJECT WORK END - SEMESTER EVALUATION

S. No.	Particulars	Max. Marks
1	Relevance of the subject in the present context	10
2	Literature Survey	10
3	Problem formulation	20
4	Experimental observation / theoretical modeling	10
5	Results – Presentation & Discussion	20
6	Conclusions and scope for future work	10
7	Overall presentation of the Thesis / Oral presentation	40
8	Project Report Writing	30
Total Marks		150

- At the end of IV B.Tech I semester, students should submit synopsis summarizing the work done in IV B.Tech I semester. The project is expected to be completed by the end of IV B.Tech II semester.
- In IV B.Tech I semester middle a Preliminary Evaluation for 10 marks is conducted and at the end of IV B.Tech II semester a Design Evaluation for 15 marks is conducted. Total of these two evaluations is 25 marks will be added to IV B.Tech II semester Internal Evaluation.
- In IV B.Tech II semester a mid-course review is conducted by Head of the Department and the project supervisor on the progress for 10 marks. On completion of the project a second evaluation is conducted for award of internal marks of another 15 marks before the report is submitted making the total internal marks 25. The end semester examination shall be based on the report submitted and a viva-voce exam for 150 marks by committee comprising of the Head of the Department, project supervisor and an external examiner.
- Every team is required to submit project after taking up a topic approved by the Departmental Committee. The project work shall be spread over in IV B.Tech I semester and in IV B.Tech II semester. The project work shall be somewhat innovative in nature, exploring the research bent of mind of the student.
- The Departmental Committee (DC) consists of HOD, Supervisor and two senior experts in the department. The committee monitors the progress of Project Work. The DC is constituted by the Principal on the recommendations of the department Head.
- Student shall register for the Project work with the approval of Departmental Committee in the IV B.Tech I semester and continue the work in the IV B.Tech II semester too. The Departmental Committee (DC) shall monitor the progress of the project work. In IV B.Tech I semester, Stage - I of the Project Work is to be completed. A team has to identify the topic of work, collect relevant Literature, preliminary data, implementation tools / methodologies etc., and perform a critical study and analysis of the problem identified. They shall submit status report in two different phases in addition to oral presentation before the Departmental Committee for evaluation.
- A candidate shall continue the Project Work in IV B.Tech II semester (Stage - II) and submit a Project report at the end of Stage - II after approval of the Departmental Committee. During Stage - II, the teams shall submit status report in two different stages, in addition to oral presentation before the DC. The DC shall evaluate the project for 50 internal marks (Stage - I & II) based on the progress, presentations and quality of work.

- Three copies of the Project Work certified in the prescribed form by the supervisor and HOD shall be presented to the Department and one copy is to be submitted to the Dean Academics, and one copy to be sent to the concern HOD.
- The department shall submit a panel of five experts. However, the examiners for conducting viva-voce examination shall be nominated by the JNTUH. If the report of the examiner is favorable, viva-voce examination shall be conducted by a board consisting of the Supervisor, Head of the Department and the examiner who adjudicated the Project. The board shall jointly evaluate the project work for 150 marks.
- Every candidate doing B.Tech. shall be encouraged to send a paper / patent for publication in a journal or a conference - preferably a concept paper related to their topic and a second paper highlighting their contribution and the results of their work. An acknowledgement from the Supervisor for having communicated to the journal or conference shall be attached to the report of the Project Work.
- A copy of the approved Project Work report after the successful completion of viva examinations shall be kept in the library of the department.

9. STUDENT – PROPOSALS

If student has his/her own idea for an individual Project, it is the student's responsibility to find a faculty member who both approves of the proposed programme of work and is willing to be the supervisor. Student should first get the permission of Project Committee, and may proceed with the consistent consent of the Supervisor.

10. SUPERVISOR

The supervisor can suggest Project titles focusing more on the current field of research and ensure the level of innovation. Also Supervisors are advised to check for the formatting of the presentation and Project report.

11. SUPERVISOR TO CHECK

For Projects proposed by faculty member, student should discuss the Project with the proposer as soon as possible so that student have plenty of time to think about the best choices for student. Note that every Project is not suitable for every student; some may be specifically tailored to a particular degree and some may only suit students with a very specific set of interests. Each proposal will indicate these constraints in order to help student to make an informed choice.

- Advised to check for the formatting of the presentation and the documentation.
- Check for the attendance of the students (Regular meeting for the discussions).
- Advise the students to contribute some new techniques and publish a paper at the end of the Project.

12. STUDENT'S MEETING WITH SUPERVISOR

Student must make sure that she/he arranges regular meetings with student's Supervisor. The meetings may be brief once student's Project is under way but student's Supervisor need to know that student's work is progressing. If student need to talk to the Supervisor and cannot locate him/her in office, contact him/her asking for a time when she/he will be available. When a student goes to see the Supervisor she/he should have prepared a written list of points she/he wish to discuss. Take notes during the meeting so that student does not forget the advice she/he was given or the conclusions that were reached.

13. PROJECT COMMITTEE

The Project committee is advised to conduct the Project reviews for the students of various programmes within the stipulated period. The project committee is also advised to make necessary arrangements required (Seminar hall availability and Dissertation or, etc...) for the smooth conduct of reviews.

- The committee is advised to find the enough complexity in the Project.

- All the panel members of project must be present during the review.
- The reviews to be conducted in the seminar hall or the available class rooms (in the department).

14. PROJECT PRESENTATION / DEMONSTRATION

The presentation is also a compulsory component of the Project. The Project committee will not allocate marks for a Project unless there has been a formal presentation. One of the most important skills which the Project aims to assess is student's ability to communicate his/her ideas and work. The objective of the presentation is to find out exactly what she/he seem to have done and to ensure that s/he get relevant marks that is consistent with other Projects. As part of the assessment, the student will be required to give a presentation and demonstration of his/her Project to the Project Committee. Each presentation will be for 30 minutes. Supervisors will help him/her to structure the talk and be willing to go through it with student beforehand. Other UG students could be encouraged to attend the presentations as observers only, as the feedback by the committee will benefit everybody.

15. PROJECT WORK STAGE - I REQUIREMENTS: B.Tech

First Review Within 8 Weeks	Second Review Within 16 Weeks
<ul style="list-style-type: none"> • Title • Abstract • Introduction • Literature Survey • References 	<ul style="list-style-type: none"> • Title • Abstract • Introduction • Literature Survey • Methodology • Modules Split-up and Gantt Chart • Proposed System (Stage -I) • Equations /Design and software to be used • Algorithms / Techniques used • Expected outcomes • References

Note:

- The presentation should have maximum of 30 slides
- Presentation will be for 30 minutes
- System to be tested using testing software.



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PROJECT EVALUATION FORM

B.Tech: Project Work (Stage - I)

IV B.Tech I Semester

FIRST REVIEW

Project Title:

Candidate Details				
S. No	Roll No	Candidate Name	Supervisor	
1				
2				
3				
4				
Candidate Contribution and Performance				
Subject Matter	Marks (10M)			
	Batch Members			
	1.	2.	3.	4.
Understanding background and topic (1M)				
Specifies Project goals (1M)				
Literature Survey (2M)				
Project Planning (2M)				
Presentation skills (2M)				
Question and Answer (2M)				
Total (10M)				
Comments				

Member 1

Member 2

Member 3

Supervisor



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PROJECT EVALUATION FORM

B.Tech: Project Work (Stage - I)

IV B.Tech I Semester

SECOND REVIEW

Project Title:

Candidate Details				
S. No	Roll No	Candidate Name	Supervisor	
1				
2				
3				
4				
Candidate Contribution and Performance				
Subject Matter	Marks (15M)			
	Batch Members			
	1.	2.	3.	4.
Abstract (1M)				
Specifies Project goals (1M)				
Literature Survey (1M)				
Summaries algorithms and highlights the Project features (1M)				
Specifies the testing platforms and benchmark systems (1M)				
Project Planning (1M)				
Technical Design (2M)				
Summarises the ultimate findings of the Project (1M)				
Implementation (60 Percentage) (2M)				
Question and Answer (2M)				
Presentation skills (2M)				
Total (15M)				
Comments				

Member 1

Member 2

Member 3

Supervisor

16. PROJECT WORK STAGE - II REQUIREMENTS: B.Tech

First Review Within 4 Weeks	Second Review Within 16 Weeks
<ul style="list-style-type: none"> • Title • Abstract • Work completed for Stage - I • 70% of code Implementation • Expected outcomes • Draft copy of conceptual paper • References 	<ul style="list-style-type: none"> • Title • Abstract • Work completed for Stage - II • 70% of code Implementation • Detailed Design (if any deviation) • Contribution of the candidate • 100% of code Implementation - Demo • Experimental Results • Performance Evaluation • Comparison with Existing system • Result Analysis and Conclusion • References • Draft copy of a Project for publishing

Note:

- The presentation should have maximum of 30 slides
- Presentation will be for 30 minutes
- A draft copy of the conference paper to be prepared at the end based on the Project Work.
- System to be tested using testing software's.



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PROJECT EVALUATION FORM

B.Tech: Project Work (Stage - II)

IV B.Tech II semester

FIRST REVIEW

Project Title:

Candidate Details				
S. No	Roll No	Candidate Name	Supervisor	
1				
2				
3				
4				
Candidate Contribution and Performance				
Subject Matter	Marks (10M)			
	Batch Members			
	1.	2.	3.	4.
Abstract (1M)				
Work to be completed in Stage - I (1M)				
Architecture / System Design - Stage I & II (1M)				
Work to be completed in Stage - II (1M)				
Summaries the techniques implemented / to be implemented (1M)				
Contribution of the Candidate (1M)				
Results obtained and Summaries the ultimate findings of the Project (1M)				
Implementation (70 Percentage) (1M)				
Question and Answer (1M)				
Presentation skills (1M)				
Total (10M)				
Comments				

Member 1

Member 2

Member 3

Supervisor



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PROJECT EVALUATION FORM

B.Tech: Project Work (Stage - II)

IV B.Tech II semester

SECOND REVIEW

Project Title:

Candidate Details				
S. No	Roll No	Candidate Name	Supervisor	
1				
2				
3				
4				
Candidate Contribution and Performance				
Subject Matter	Marks (15M)			
	Batch Members			
	1.	2.	3.	4.
Abstract (1M)				
Architecture /System Design: Stage - II (1M)				
Overall Architecture /System Design: Stage - II (1M)				
Summarises the techniques implemented (1M)				
Contribution of the Candidate (1M)				
Results obtained and Performance Evaluation (2M)				
Summarises the ultimate findings of the Project (1M)				
Implementation (100 Percentage) (2M)				
Prefinal draft of entire Project (1M)				
Draft of the paper to be published (1M)				
Question and Answer (2M)				
Presentation skills (1M)				
Total (15M)				
Comments				

Member 1

Member 2

Member 3

Supervisor

17. GUIDELINES FOR THE PREPARATION OF B. TECH PROJECT REPORTS

All fonts name must be Times New Roman.

1. Page size - A4; Margins - left-3.0cm, Right-2.0 cm, Top-2.5 cm, Bottom-2.5 cm, Gutter-0
2. Project Work format must at least contain the following:
 - Cover page (Front and Inside)
 - Certificate
 - Declaration
 - Acknowledgements
 - Abstract
 - Table of Content
 - List of Figures
 - List of Tables
 - List of Abbreviation
 - List of Symbols
3. Chapter 1 - Introduction
4. Chapter 2 - Literature Review & Problem Identification
5. Chapter 3 - Methodology
6. Chapter 4 – Implementation
7. Chapter 5 – Result Analysis Conclusion & Future Work
8. References
 - [1]. First Author, Second Author, Third Author – ‘Paper Title Name’,- Journal/ Conference Name, Publisher: xxxx, Place:xxxx, Country: xxxx, Year:19xx, Vol. No.:xxxx, Iss. No., pp.xx to xx
9. Appendices
10. Chapter Title (e.g. **CHAPTER 1 - INTRODUCTION**) bold upper case font size 16
 - 1.1 INTRODUCTION** Chapter heading in upper case bold 12 font size:
Every chapter should have an ‘Introduction’ in the beginning and at the end a ‘Conclusion’ - Font size 12 for main text/paragraphs as given here
 - 1.1.1 First Sub-Sub Heading:** upper and lower case of 12 font size
Line spacing must be 1.5

(Template for one chapter is given below)
CHAPTER 1 – INTRODUCTION [14]

1.1 INTRODUCTION [12 bold and caps]

Every chapter should have chapter No. and Chapter headings, sections and subsections of the different chapters along with page numbers of each. It should be possible to get a complete picture of the Dissertation by looking at the contents. While, the contents cannot be as brief as listing only the chapter headings, it need not be as elaborate as to list all paragraph titles within subsections. It is preferable to include the chapter, section and subsection headings only in the contents with appropriate page numbers.

1.1.1 Numbering Sections, Subsections, Equations [bold and upper lower]

A word on numbering scheme used in the Dissertation is in order. It is common practice to use decimal numbering in the Dissertation. If the chapter number is 2, the section numbers will be 2.1, 2.2, 2.3 etc. The subsections in section 2.2 will be numbered as 2.2.1, 2.2.2 etc. Unless essential, it is not necessary to use numbers to lower levels than three stages. Headings of paragraphs below the subsections may be bold faced and in sentence case. Similarly, it is useful and convenient to number the figures also chapter-wise.

The figures in (say) chapter 4 will be numbered Fig.4.1, Fig 4.2 etc. This helps you in assembling the figures and putting it in proper order. Similarly, the tables are also numbered as Table 4.1 Table 4.2 etc. All figures and tables should have proper captions. Usually the figure captions are written below the figure and table captions on top of the table. All figures should have proper description by legends, title of the axes and any other information to make the figures self-explanatory.

Figures in color are not essential, but if it is essential, can be given. If used, all copies submitted should have figures in color. The same numbering scheme can be used for equations also. Only thing to be remembered is that references to the figures are made like Fig 4.2 and equations as Eqn (4.5) and tables as Table 4.2. If there are some appendices, these can be numbered as A1, A2 and A3 etc. The equations in these appendices can be numbered as (A1.1), (A2.3) etc.

a) References

It can be numbered as 1, 2, 3 etc. year wise with the latest as 1, referred to in the body of the Dissertation, say (Henk, 2013). An alternate way as mentioned in some journals is to arrange the references in the alphabetical order of the names of authors in which case the reference in the body of the Dissertation looks like 'as mentioned in (Adam and Eve 1946)'. However, for uniformity and brevity, the first method (like the one followed in IEEE journals) is to be used.

References to journal papers should contain the name of the author(s), title of the paper, name of the journal, volume number, issue number, particular pages (pp) and year of publication. If there are more than three authors, it is enough to mention the name of the first author followed by .et.al (meaning and others)

i) Bibliography

This contains materials that were useful for the preparation of the Dissertation in a general way and is not directly referred to in the Dissertation. IT is not essential, but will be of immense help for a student who tries to read and understand the contents of the Dissertation.

ii) Appendices

If there is material that if included in the body of the Dissertation would break up the flow of reading or bore the reader unbearably, it is better to include it as an appendix. Some items which are typically included in appendices are: major derivations or theoretical developments, important and original computer programs, data files that are too large to be represented simply in the results chapters, pictures or diagrams of results which are not important enough to keep in the main text etc.

18. FORMAT FOR PRELIMINARY PAGES OF B. TECH PROJECT REPORTS

Project Title Name [24 font size]

A PROJECT WORK [14]

**Submitted in fulfillment of the award of Degree of Bachelor of Technology in
Branch Name [14]**

**Submitted
by [14]**

**Candidate's Names [14]
Roll Nos. – 00000000000 [14]**

**Under the Supervision
of [14]**

Supervisor's Name [14]



**Department Name.....
INSTITUTE OF AERONAUTICAL ENGINEERING**

DUNDIGAL – 500 043, HYDERABAD, TELANGANA [14]

Month, Year [14]



INSTITUTE OF AERONAUTICAL ENGINEERING

DUNDIGAL – 500 043, HYDERABAD, TELANGANA [16]

Department

CERTIFICATE [16]

This is to certify that the work embodies in this dissertation entitled '*Topic Name*' being submitted by '**Candidate's Names Roll Nos. – 000000000000**' for partial fulfillment of the requirement for the award of '**Bachelor of Technology** in **Branch Name** discipline to Institute of Aeronautical Engineering, Dundigal, Hyderabad during the academic year 20xx - 20xx is a record of bonafide piece of work, undertaken by him/her the supervision of the undersigned. [14]

Approved and Supervised by

Signature
(Supervisor's Name)
Department, Designation

Forwarded by

Dr. L V Narasimha Prasad
Principal

HOD Name
Professor and Head

EXTERNAL EXAMINER



INSTITUTE OF AERONAUTICAL ENGINEERING

DUNDIGAL – 500 043, HYDERABAD, TELANGANA [16]

Department

DECLARATION [16]

We ‘Candidate Names’, are students of ‘Bachelor of Technology in Branch Name’, session: 20xx - 20xx, Institute of Aeronautical Engineering, Dundigal, Hyderabad, hereby declare that the work presented in this Project Work entitled ‘Topic Name’ is the outcome of our own bona fide work and is correct to the best of our knowledge and this work has been undertaken taking care of Engineering Ethics. It contains no material previously published or written by another person nor material which has been accepted for the award of any other degree or diploma of the university or other institute of higher learning, except where due acknowledgment has been made in the text. [14]

(Candidate Names)
Roll Nos.: xxxxxxxxxxxx

Date:

ABSTRACT OF PROJECT WORK

This part of the Project will be the most widely published and most read because it will be published in Dissertation Abstracts International. It is best written towards the end, but not at the very last minute because you will probably need several drafts. It should be a distillation of the thesis: a concise description of the problem(s) addressed and your method of solving it/them, your results and conclusions. An abstract must be self-contained. Usually they do not contain references. When a reference is necessary, its details should be included in the text of the abstract. The number of words may be limited to 1000 not exceeding two pages of spacing 1.5 and font type Times New Roman with size 12.

- **Content Page**

It should show the main headings and subheadings with page numbers

- **List of Symbols**

List the Greek symbols first English letters next, lower case letters and upper case letters in this order. Each group should be arranged in alphabetic order.

- **List of Figures**

List the number and captions of the figures with page numbers here.

- **List of Tables**

List the number and titles of the tables with page numbers

- **List of Abbreviations**

List the abbreviations, particularly those that are not very common, in alphabetical order.

- **Page Numbering**

The preliminary pages are numbered in small roman numerals (i, ii, etc). The first page of the first chapter (Introduction) onwards will be numbered in Arabic numerals 1, 2, 3, etc. on the right side top.