

Guidelines for B. Tech Project

These guidelines for successful completion of the B. Tech. projects are to facilitate various institutes in effective and uniform conduction of projects to be carried out by undergraduate students in Semester VII and Semester VIII. It is expected that these guidelines will help in overall improvement in the quality of B. Tech. projects along with improvement in the evaluation process. The B. Tech. project is a partial requirement for successful completion of the degree. It can be two types: Projects based on implementation of any application oriented problem, which will be more or less experimental in nature, and the others will be based on some innovative/ theoretical work.

In order to monitor the overall functioning of the activities related to the B. Tech projects and to have academic bridge among the various groups, it is proposed to create three level of committees- one at the UPTU level, henceforth termed as University Project Cell (UPC), one at each Institute, henceforth termed as Institute Project Cell (IPC), and one at each department of the Institute which is termed as Department Evaluation Committee (DEC).

IPC of an Institute will comprise the Director of the institute or his nominee as the Convener and all the heads of the department. Director will inform the university the members of the IPC by December of each year.

DEC will comprise the Head of the Department as the Convener along with two senior faculty members of the department and a faculty member from other department nominated by the IPC. The Head will form the cell by the middle of the odd semester and will inform the Director of the Institute accordingly. Task of nomination of the faculty member from other department has to be completed by the end of Summer Vacation of the Institute.

Roles of these committees are given below:

A) University Project Cell (UPC) :

- Project Evaluator List : The university level project evaluation cell is responsible to take out external project evaluators list. This list should comprise of faculty members teaching in reputed technical institutes and having more than 5 years of teaching experience.
- Like the academic calendar, a separate calendar for project evaluation will be given in advance by the Project Cell.
- The project evaluation will be carried within One week after the final year theory examination.
- The Project Cell will be responsible for conducting training programs for all the university's faculty members of various institutes.

- The main aim of these training programs (which will be conducted by some experienced faculty member preferably from some IITs) will be to make the faculty members aware of the new and emerging trends in research as well as in industry.
- The list of all the projects conducted in the last 3 years by all the institutes department wise will be maintained and updated by the Project Cell.
- The Project Cell is also responsible for random re-evaluation/ scrutiny of the projects.

B) Institute Project Cell (IPC):

- The main aim of this cell is to supervise all the projects carried out in the various departments and make sure that only good quality projects are undertaken by the students.
- This cell should also ensure that the institute is equipped with high quality library so that the students have an access to various good journals and reference books required for their project purpose.
- Any problems pertaining to project allotment, project conduction, project group allotment etc will be resolved by this cell if it cannot be resolved by the Department Evaluation Committee.

C) Department Evaluation Committee (DEC):

- This committee will be responsible for evaluating the timely progress of the projects and communicating the progress report to the students.
- At the end of third year second semester (VI semester) the Department Evaluation Committee should float the list of projects to be offered by department along with the concerned supervisor's name.
- In case it is observed by the DEC that any group of students is not performing well, this committee should take special care to improve their performance by means of counseling them.

Each project activity must be supervised by the faculty members of the Institute. These faculty members are termed as Supervisors. There can be at most two supervisors for a B. Tech Project; out of which at least one has to be from the Department and other can be from outside the Department/ Institute. However, in order to select a supervisor from outside the Institute, the Department has to take the prior permission from the University.

It is the responsibility of the Department to provide the Supervisor(s) for each B. Tech Project. Supervisors may be assigned to each project group either by the choice of student groups or by faculty expertise. A faculty member of the department can supervise B. Tech projects only if he/ she is having at least 2 years teaching experience in an engineering college. However, a faculty member not having sufficient teaching experience can be a co-supervisor. An eligible faculty member can supervise at most 3 B. Tech projects in an

academic year. However, as a special case the Director of the institute can permit a faculty member to supervise at most 5 such projects. In case the Department finds it difficult to get the desired number of supervisors then it can hire part time supervisor from other departments/ institutes/ industries. Role of Supervisor is given below:

- By the middle of third year second semester (VI semester) the supervisor should send the detailed information about the projects to be offered by him/ her to the Department Evaluation Committee.
- The supervisor must monitor the progress being carried out by the project groups on regular basis. In case it is found that progress is unsatisfactory it should be reported to the Department Evaluation Committee for necessary action.
- It is expected that the supervisor looks into the project report for desired format before the final submission.

Each B. Tech Project has to be carried by a group of students of that Institute. In order to ensure participation of each student, the group size should be preferably at least 2 but not more than 4 students. Formation of project groups should be done such that each group has representation of students with varying academic merit from best to average. In view of this following practice may be followed :

- Decide total number of feasible groups. Any left out student(s) should be randomly attached to any group.
- Enlist the students in the order of their previous year merit
- Depending upon number of groups to be formed identify the group members in order of merit.

For example; If in a class of 31 students 10 groups are to be formed with at most four students in each group. First prepare the list of students in order of their merit. Assign group leaders for each group such that he/she is out of the top 10 students and other members of the group may be decided by the group leaders in consultation with Project Coordinator. Any left out student(s) may be assigned to any group.

In case the project is on multi-disciplinary nature, the Project group can be formed consisting of the students from other Departments. But there must be at least one student from the Department who is offering the Project.

Evaluation Procedure :

To ensure proper conduction of each project, progress of each project should be monitored on continuous basis first by the supervisor and than by the Department Evaluation Committee. In order to do so, it is planned to hold 4 presentations to be made by each project group in each semester. In Semester VII, the first presentation will be purely synopsis presentation, which will be taken by the Department Evaluation Committee (DEC) in the second week after the institute opens after vacation. The project is assumed to be already selected by the students.

In this presentation they are required to show a brief power point presentation describing the main Aim/ Objective of the project, the methodology to be used, the PERT chart and the references in not more than 10-15 slides. This presentation shall be made before the respective project supervisor first and on his approval it should be made before the Department Evaluation Committee. The project is considered to be approved only if it is passed in this presentation. If the presentation is not up to the mark either the Committee will ask the students along with their supervisor to modify the project slightly within a week and present again or change the project (in case the committee finds the project not of sufficient standard or not feasible). The list of all the finalized projects should be sent to the Institute Project Cell. The DEC should meet the Institute Project Cell within a week after the first presentation is made to discuss the quality of the projects taken by students and any changes required should be communicated to the supervisors and thereafter the students immediately.

The second presentation of this semester will be planned by the DEC after about one month from the first presentation. This presentation will review the progress of the students. Each group will first show their progress to their respective supervisors first and get the brief project report signed from them and present the same before the DEC. The groups are also required to make a power point presentation (not more than 10-15 slides) and present before the DEC. They are also required to clearly state the agenda for the next one month in their presentation. In this presentation the DEC is supposed to mark each student/ group based on their project content, presentation made, project progress, queries answered and attendance out of **25 marks** (the break up can be decided by DEC). The DEC shall finalize the marks just after the presentation and these marks should be displayed along with the comments within two days from the date of the presentation. The record of the same should be circulated to all the concerned supervisors and one copy should be sent to the Institute Project Cell.

After about one month from the date of the second presentation, DEC should plan for the third presentation. It shall be made on the same way as the first presentation was conducted and the groups should be evaluated in the same manner.

Final presentation at the end of seventh semester will be organized by the DEC according to the date given in the project calendar (made initially by the University Project Cell). This presentation will be taken by DEC, all supervisors and co-supervisors and a member from Institute Project Cell should also be present in this presentation. The Committee will review the progress of the students. Each group is required to make a project report showing the complete six month progress of the project. This report should be brief (spiral bound) and should mainly contain the detailed methodology/ algorithms adopted/ studied during the entire semester and should clearly state the agenda for the next semester (by means of PERT chart). This report should be signed by the supervisors and should be submitted to the DEC at least two days before the final presentation. The groups are also required to make a power point presentation (not more than 15-20 slides) and present before the final Committee. In this presentation the DEC is supposed to mark each student/ group based on their project

content, presentation made, project progress, queries answered and attendance out of **50 marks** (the break up can be decided by DEC).

In the next semester, DEC will announce dates of 4 presentations in the Departmental Academic Calendar well in advance. First two presentations are to be made to understand the progress of the work. They shall be made on the same way as the second presentation conducted in the Semester VII and the groups should be evaluated in the same manner.

Each project group has to prepare the project report and to submit it to the Department after duly certified by the Supervisors at least 3 days before the final Internal presentation. This report has to be prepared based on the format mentioned in Appendix A. Final Internal presentation will be taken one week before the date of final external presentation which will be given in the project calendar already by the Institute Project Cell. This presentation will be made before the DEC, supervisors and co-supervisors should be present in this presentation. All the sessional marks for Semester VIII will be mainly given in this presentation and the marks given in the first two presentations should also be added to make the final score. The final project report should be extensively checked and signed by the supervisors and also by the DEC. The groups are also required to make a final power point presentation and present before the final Committee. This presentation shall demonstrate the complete working project. In this presentation the DEC is supposed to mark each student/ group based on their project content, presentation made, project progress, queries answered and attendance out of **50 marks** (the break up can be decided by DEC). The sessional marks of each student shall be decided within two days from the date of final presentation by the DEC and the copy of the same should be circulated to all supervisors and co-supervisors and to the Institute Project Cell.

Final External Presentation will be made according to the date given in the project calendar. The external examiner (who is some senior faculty member) will evaluate not more than 20 projects in a day which means that he/ she is required to stay for 3 days for evaluating all the projects for a typical batch of 60 students. The expected number of days needed to be spent by the External Examiner to evaluate the B. Tech projects of different batch size is given in the following table.

Batch Size	Number of Days to be spent by External Examiner
≤ 30	2 days
≤ 60	3 days

The External Examiner may first see the demonstration of each group along with their reports in the first two days and then take viva of each group in the last day. Along with the external examiner DEC will be present in all the presentations and the concerned supervisor can be invited at the time his/ her group is making the presentation. The supervisor can help to explain the project at the end of presentation made by the students. However it is expected that by no means supervisor(s) will try to influence the committee for better marks etc.

Normalization of Marks:

There is a possibility that the marks obtained in B. Tech Projects by various groups across the university may not be uniform because of the involvement of many examiners. Hence it is suggested to introduce the concept of normalizing these marks. For this we need to formulate a proper normalization scheme. One scheme could be followed by re-evaluating a few project reports of all Departments of various institute. These reports can be selected at random. Another possible scheme could be to use the minimum and maximum marks obtained by the various projects of different departments of different Institutes,

Awards & Remuneration:

Since the activities of UPC are additional and critical, it is suggested that all external members of UPC shall be paid proper remuneration by the university. Amount of remuneration may vary time to time. Since it is expected that an external examiner can evaluate at most 20 projects per day and he might have to spend 3 days to evaluate a batch of 60 students in an Institute, so it is expected that the local hospitality for the external examiner who is a faculty member of other Institute and nominated by UPC will be borne by respective institute. However, Honorarium, TA and DA will be borne by the UPTU.

DEC will nominate at most one project for the Best B. Tech Project of the Institute. IPC will select the best project among the nominated best projects of the Institute. The project group may be given an award along with a certificate at the time of Institute Annual Function or University Convocation. Further, their names will appear in the website maintained by the university.

It is important that each Institute should put a special effort to publish in well known International Conferences and Journals. List of such conferences and journals will be maintained by the university. Any publication in such conference and journal as a result of their project will be appreciated highly and the project group can be awarded by cash prize from the university.

FORMAT FOR
B. Tech. PROJECT REPORTS

U.P. Technical University
Lucknow

2008

CHAPTER 1

INTRODUCTION

There is a need to provide the detailed guidelines, procedures and rules that to be followed to prepare the B. Tech Project Reports at the U. P. Technical University. These guidelines etc are to be strictly followed to maintain the uniformity in the reports and there should not be any deviation from the guidelines prescribed in this document.

In each report a candidate has to take special care to show the correctness and clarity to each expression. So, the responsibility of these factors always rests primarily on the candidate. Student's guide will scrutinize each report carefully for these criteria.

There are certain requirements that are to be fulfilled in the Reports. Some of them are the weight of paper used, the title page, the table of contents. These requirements are stated in the following two sections. There are some general instructions that are to be followed. In second section, rules and guidelines for text processing are discussed.

1.1 General Rules

The following rules and statements are presented more as answers to questions frequently asked rather than an alphabetically indexed coverage of every contingency. If for good reason a student must seek exception to the practices listed here, he should consult his supervisor.

Project Reports should be submitted to candidate's advisor for review well in advance so that the supervisor suggests the necessary changes that should be incorporated in the reports.

The Department Library requires the deposit of one copy of the approved report while the supervisor concerned requires one copy.

An example of the Title Page for the Project Report is given in this document. Follow the example carefully as to form and spacing. At the bottom of the example page where year is shown, write the semester date (month and year) in which the requirements for the degree were satisfied.

While no specific form needs to be followed, it is suggested that the abstract cover the following points: statement of the problem; procedure or method; results; conclusions. It is suggested also that headings, tabular material, chemical formulas, and footnotes be excluded. Primarily, the abstract should give the information that will enable a scholar to tell whether he/she wishes to read the complete work.

Project reports submitted for review must be bound.

Candidates desiring multiple copies of their report can use photocopying or equivalent processes.

Declaration, Certificate of Supervisor or Acknowledgements must immediately precede the Abstract and must be brief, one page or less in length. This is the proper place for acknowledgements to individuals or organizations. Such acknowledgements must be made simply.

In general, Tables, Graphs, Charts and Illustrations are special matters usually of a technical sort, and the proper form must be understood and followed after a candidate has received instructions from his/her supervisor. To ensure satisfactory reproduction on microfilm, drawings, graphs, etc., should be prepared in black ink, since colored ink appears as varying shades of grey.

Only contrasting and clear photocopies of inked drawings are acceptable. Blueprint or Ozalid prints are not acceptable because of impermanence.

Some Suggestions to improve the quality of the reports are given below.

One should note the spelling of **Foreword**.

Periods and commas go inside quotation marks; semicolons and colons go outside.

The word **data** is plural and requires a plural verb.

Numbers from one to nine, inclusive, should be spelled out, for number 10 and above, use numerals. Numbers should be spelled out when they begin a sentence.

One should spell out per cent; do not use %, and write per cent as two words without a period. He should not say "due to" for "because of", "over" for "more than", "secure" for "obtain," etc. Be sure tenses throughout are consistent, likewise that all verbs and subjects agree in number; that the antecedent of each pronoun is clear.

Use of the pronoun such as "I", "We", "You", "He", "They" must be avoided. It is suggested to use passive voice in such cases.

Listings of the developed computer software should be given in an appendix. However, if the code is longer than 300 lines the listing should be given in a separate CD following proper indentation and comments.

CHAPTER 2

PROJECT REPORT STRUCTURE

In this chapter we describe the structure of the project report that is expected from a project group. The project group should spend enough time to prepare the report. It deals with all major issues that should be taken in to account in the report. In a report, not only there is a need of having proper structures but also it should speak about the format of the text processing. It has several sections. In the first section, it deals with the some initial pages such as Title Page, Declaration, Certificate, Acknowledgement, Table of Contents. In Section 2 the way one can write Abstract of the report has been explained. Section 3 discusses the expectation of a reader in the first chapter of the report known as Introduction. Next section is used to discuss the expected contents of the middle chapters of the report. Generally there are at least three middle chapters in the report such as Methodology, Results and Discussion. Last chapter of the report discusses Conclusion and Future Work. Its format and expectation is given in Section 5. Next section deal with the situation when one has to add Appendices in the project report. Last section explains the way one should write the references that are used in writing the report.

1. Preliminary Pages

This section discusses the need of having preliminary pages along with their need. Preliminary pages are Title Page, Certificate, Declaration, Acknowledgement, Table of Contents.

a) In **Title Page** author must mention Title of the report along with name of project group, supervisor, Department, Month and Year of submission. An effort should be made so that the Title of the report consists of minimum number words but also it can give enough meaning on the work studied in the report. The desired format of the Title Page is enclosed in Appendix. The project group is advised to check it carefully.

b) The draft copy of the project report has to be submitted to the supervisor for the review. Based on the comments given by him, the project group should modify the report and include a **certificate** signed by the supervisor. The certificate should mentioned that the work has been carried out by this project group and has not been submitted by any other group of the institute for the award of any other degree. The format of the certificate is given in the Specimen Format of the report.

c) The project report must also contain a **declaration** from the project group to avoid the problem of plagiarism. Format of the certificate is given in the Specimen Format of the report. It is expected that the project group has submitted the results of their own thought, research, or self-expression. In cases where students feel unsure about a question of plagiarism involving their work, they are obliged to consult their instructors on the matter before submission.

When students submit work purporting to be their own, but which in any way borrows ideas, organization, wording or anything else from another source without appropriate acknowledgment of the fact, the students are guilty of plagiarism.

Plagiarism includes reproducing someone else's work, whether it be a published article, chapter of a book, a paper from a friend or some file, or whatever. Plagiarism also includes the practice of employing or allowing another person to alter or revise the work which a student submits as his/her own, whoever that other person may be. Students may discuss assignments among themselves or with an instructor or tutor, but when the actual work is done, it must be done by the student, and the student alone.

When a student's assignment involves research in outside sources or information, the student must carefully acknowledge exactly what, where and how he/she has employed them. If the words of someone else are used, the student must put quotation marks around the passage in question and add an appropriate indication of its origin. Making simple changes while leaving the organization, content and phraseology intact is plagiaristic. However, nothing in these Rules shall apply to those ideas which are so generally and freely circulated as to be a part of the public domain.

Plagiarism is a serious academic offense. Students occasionally plagiarize unknowingly, but this ignorance of the definition of plagiarism is not an excuse and does not prevent a penalty from being applied.

d) Most thesis authors put in a page of thanks, known as **Acknowledgements**, to those who have helped them in matters scientific, and also indirectly by providing such essentials as food, education, genes, money, help, advice, friendship etc. If any work is collaborative, one should make it quite clear who did which sections. Author should not forget to acknowledge if he has obtained any financial support from the Department or any other source to pursue this work. Format is enclosed.

e) **Table of Contents** provides the list of all headings and subheadings with page numbers. Subheadings are properly indented. It also provides list of all Tables, Figures and Symbols used in the report along with their respective page numbers. A general format is given in the Specimen Format of the report.

2. Abstract

An **abstract** is an abbreviated version of the project report. It should be limited to a maximum of 250 words. The project abstract appears at the beginning of the report. Almost all scientists and engineers agree that an abstract should have the following five pieces such as Introduction, Problem Statement, Procedure, Results and Conclusion. In **Introduction**, one describes the purpose for doing such a project. It should address the need for such type of work. It should explain something that should cause people to change the way they go about their daily business. If the project leads to an invention or development of a new procedure, it should mention its advantages. Abstract should be such that it motivates the reader to read the entire paper or display board. In the next stage, one should write down the **Problem Statement**. It is needed to identify the problem that has been considered in the project. In **Procedures**, the approach used to investigate the problem should be mentioned in the abstract. However it is expected that one will not go into detail about materials unless they were critical to the success. However one should try to describe the most important variables

used in the report if room permits. In the fourth stage, abstract must clearly state the **Results**/ achievements obtained through the execution of the project. Finally **Conclusions** are given in the last stage. One should state clearly whether the objectives have been met or not. If not, the reasons behind it should be stated in few words.

In writing the abstract, one should avoid the following things.

1. Any technical term that most readers do not understand should be avoided.
2. Any abbreviation or acronym that is not commonly used should be avoided.
3. Abstracts should not contain a bibliography or citations.
4. Abstracts should not contain any tables or graphs.
5. Abstracts must give only minimal reference to any earlier work.
6. Abstract should only include procedures done by the group.
7. One should not put acknowledgements in the abstract.

2.2.1 Importance of Abstract

Abstract helps people quickly to determine if they want to read the entire report. Consequently, at least ten times as many people will read an abstract as any other part of the total work. It's like an advertisement of the work done. If one wants judges and the public to be excited about the project, then he must write an exciting, engaging abstract.

Since an abstract is so short, each section is usually only one or two sentences long. Consequently, every word is important to conveying the message. If a word is boring or vague, one should refer to a thesaurus and find a better one. If a word is not adding something important, one should not use it. But, even with the abstract's brief length, one should not be afraid to reinforce a key point by stating it in more than one way or referring to it in more than one section.

2.2.2 Meeting the Word Limit

Most authors agree that it is harder to write a short description of something than a long one. One can use the following tip. For the first draft, one should not be overly concerned about the length. Just he should make sure that the draft abstract has considered all the key information. Then one can cross out words, phrases, and sentences that are less important than others. In the next stage one can look for places where sentences can be combined so that the total length can be reduced. After a short break, one should again read the draft to give the final shape of the abstract. With a fresh eye, one will probably find new places to cut and will be able to make the abstract.

3. Introduction

It is the first chapter of the Report. The purpose of an introduction in the B. Tech Project Report is to justify the reasons for writing about the report. The goal in this section is to introduce the topic to the reader, provide an overview of previous research on the topic, and identify the own hypothesis. The goals just mentioned could, if abused, lead to write an introduction that is pages and pages long. It can be noted here that the introduction should not contain every bit of detail in the report, and it should not include support for the report. An introduction might, however, include the reasons for supporting the report.

In order for readers to trust the writer, the introduction must be well written with few errors. In order to keep readers reading, the writer needs to catch the attention of the reader and write in an interesting way. The unique language enhancement feature may suggest words to strengthen the writing. Strong writing may hold readers' attention.

In addition to well-written English with strong vocabulary, there are a few other strategies to hold readers' attention. It should be noted that to excite the readers' interest, one may also want to sound as though the readers know the topic that are considered in the report. Some of the following strategies in the bullet-list above may help.

- To pose a specific question that can invite the readers to keep reading for the answer-- A provocative question works well to engage readers, so long as it doesn't put them off
- To choose statistics to surprise readers or to go against the common belief about a topic
- To mention a short, interesting anecdote (or story) related to the topic
- To provide an interesting (and relevant) quote
- To develop an unusual or unexpected comparison

It has been observed that the difficulty level to write the Introduction is average and it takes the variable amount of time. Generally, it consists of the five major tasks and they are i) Problem Introduction ii) Previous Work Carried out in this Field, iii) Researching the problem studied, iv) Summarization of the Results obtained and v) Organization of the Report.

3.1 Introduction of the Problem

This is the first task which provides a brief description of the research question. It speaks about the type of the experiment or study attempting to demonstrate or the phenomena that are planned to study. It also should provide a brief history of the problem and explain how it is important to make such type of study.

3.2 Summarize Previous Research

The second task of the Introduction is to provide a well-rounded summary of previous research that is relevant to the problem considered for the study. So, before one begins to write this summary, it is important to thoroughly research the problem. Finding appropriate sources amid thousands of journal articles can be a daunting task, but there are a number of steps that one can take to simplify the work which has been carried out.

3.3 Researching the Problem

One should search a journal database to find articles on the considered subject. Once an article is found, it is suggested to look at the reference section to locate other studies cited in the article. While taking notes from these articles, one should be sure to write down all the desired information. A simple note detailing the author's name, journal, and date of publication can help to keep track of sources and to avoid plagiarism.

3.4 Provide the Hypothesis

Once the previous research work has been summarized, it is expected that a subsection is to be written to explain areas where the research work is lacking or potentially flawed. It should also mention the missing or unrevealed components from previous studies on the considered problem. As a result, the derived hypothesis should lead from these questions. At the end of the Introduction, one should clearly state the hypothesis and describe the expectation that one wants to achieve through the experiment or study.

3.5 Organization of the Report

This is the last task in this section. One should write clearly the organization of the project. It provides the short description of the work reported in each chapter.

3.6 Other Issues

Types of introductions that should be avoided are given below.

3.6.1 The Dictionary Definition

Many papers begin with defining words through the dictionary meaning and then continue to discuss the topic. This type of introduction has become very stale with faculty, who have seen it thousands of times.

3.6.2 Cutting to the Chase too Quickly

It is too easy to go too far while avoiding overly general introductions. Avoid jumping right into a thesis statement and do not try to cover every topic in the first paragraph. It is difficult to say how specific to be in an introduction, but consider the idea that this part of a paper provides "the lay of the land" for a reader who can then know *why* the paper is worth finishing.

3.6.3 Memorable Quotations

Some readers do not like papers to start with another's words. This overused strategy may be acceptable if a direct quotation sets the stage for what follows and its relevance is discussed in the introduction.

3.6.4 The "telegraphic" sentence

Here a writer uses the first or second or third person to tell a reader what is going to happen. This should be avoided as far as possible. One can use passive voice to avoid such type of situation.

3.6.5 Use of Tense

Very often, it has been seen that author mixes up various tenses to express. It is expected that one uses only present tense through the report.

3.7 Purpose of Introduction

Thus an introduction serves two purposes:

- It gives readers an idea of what the rest of the writing will say.
- It provides a reason for readers to keep reading.

The first reason is the most important. Some methods for letting readers know include:

- A clear and specific thesis statement (see How to Write a Thesis Statement)
- Providing background or history for the topic
- Defining a term, phrase, or concept central to the writing
- Providing statistics

Here is a writing tip for Introduction. One should not write Introduction until draft of the report has been revised and finalized. That way, one can have a better idea of what the work actually says, instead of what one can think what it will say.

4. Middle Chapters

In some theses, the middle chapters are the articles of which the student group is the major author. There are several disadvantages to this format. One is that a report is both allowed and expected to have more detail than a journal article. For journal articles, one usually has to reduce the number of figures. In many cases, all of the interesting and relevant data can go in the project report, and not just those which appeared in the journal. The degree of experimental detail is usually greater in a project report. Relatively often a researcher requests a report in order to obtain more detail about how a study was performed.

Another disadvantage is that the journal articles may have some common material in the introduction and the "Materials and Methods" sections.

4.1 Structure of Report

The exact structure in the middle chapters may vary among theses. In some reports, it is necessary to establish some theory, to describe the experimental techniques, then to report what has been done on several different problems or different stages of the problem, and then finally to present a model or a new theory based on the new work. For such a report, the chapter headings might be: Theory, Materials and Methods, {first problem}, {second problem}, {third problem}, {proposed theory/model} and then the conclusion chapter. For other reports, it might be appropriate to discuss different techniques in different chapters, rather than to have a single Materials and Methods chapter.

Following are the some comments on the elements Materials and Methods, Theory, Results and Discussion which may or may not correspond to thesis chapters.

4.2 Materials and Methods

This varies enormously from project report to report, and may be absent in theoretical reports. It should be possible for a competent researcher to reproduce exactly what author has done by following the description. There is a good chance that this test can be applied: sometime after the author has left the institution, another researcher may like to do a similar type of experiment either with author's help, or on a new set-up in a different institute. Author should write clearly this chapter for the benefit of that researcher.

In some reports, particularly multi-disciplinary or developmental ones, there may be more than one such chapter. In this case, the different disciplines should be indicated in the chapter titles.

4.3 Theory

When author is reporting theoretical work that is not original, he should include sufficient material to allow the reader to understand the arguments used and their physical bases. Sometimes he may be able to present the theory *ab initio*, but he should not reproduce two pages of algebra that the reader could find in a standard text. One should not include theory which is not related to the work done.

When writing this section, author should concentrate at least as much on the physical arguments as on the equations. He should try to explain the meaning of each equation and provide sufficient explanation on the important ones.

When author is reporting his own theoretical work, he must include rather more detail, but he should consider moving lengthy derivations to appendices. He should think too about the order and style of presentation: the order in which he has done the work may not be the clearest presentation.

Suspense is not necessary in reporting science. Author should tell the reader where he is going before he starts. The following are the expectation from this chapter.

1. Information to allow the reader to assess the believability of the results.
2. Information needed by another researcher to replicate the experiment.
3. Description of the materials, procedure, theory.
4. Calculations, technique, procedure, equipment, and calibration plots.
5. Limitations, assumptions, and range of validity.

It should also carefully see the following issues:

1. One should be able to replicate the study accurately (for example, all of the optional and adjustable parameters on any sensors or instruments that were used to acquire the data).
2. Another researcher should be able to find accurately and reoccupy the sampling stations or track lines.
3. There should be enough information provided about any instruments used so that a functionally equivalent instrument could be used to repeat the experiment.
4. If the data is in the public domain, another researcher should be able to lay his or her hands on the identical data set.
5. One should be able to replicate any laboratory analyses that have been used.
6. One should be able to replicate any statistical analyses.
7. Another researcher should be able to approximately replicate the key algorithms of any computer software.

Citations in this section should be limited to data sources and references of where to find more complete descriptions of procedures. Results are not to be discussed in this chapter.

4.4 Results and Discussion

The results and discussion are very often combined in reports. This is sensible because of the length of a report: one may have several chapters of results and, if one waits till they are all presented before he begins discussion, the reader may have difficulty remembering what he is talking about. The division of Results and Discussion material into chapters is usually best done according to subject matter.

One must ensure that he has described the conditions which obtained for each set of results. The report must explain clearly the way of obtaining the constant, other relevant parameters. He should be sure too that he has used appropriate statistical analyses. Where applicable, he

has shown measurement errors and standard errors on the graphs. It is expected that appropriate statistical tests have been used in the work.

4.4.1 Graph Plotting

Author should take sufficient care to plot graphs. The origin and intercepts are often important so, unless the ranges of data make it impractical, the zeros of one or both scales should usually appear on the graph. One should show error bars on the data, unless the errors are very small. For single measurements, the bars should be the best estimate of the experimental errors in each coordinate. For multiple measurements these should include the standard error in the data. The errors in different data are often different, so, where this is the case, regressions and fits should be weighted (i.e. they should minimize the sum of squares of the differences weighted inversely as the size of the errors.) A common failing in many simple software packages that draw graphs and do regressions is that they do not treat errors adequately. Author can just 'paste' data into the input and it generates a .ps file of the graph.

In most cases, each result needs discussion. Meaning of each result has to be explained. It should be explained clearly how they fit into the existing body of knowledge. Consistency of the results are to be seen. Results should give new insights. If possible, it should suggest new theories or mechanisms. Some salient points which should be taken care are given below.

1. The results are actual statements of observations, including statistics, tables and graphs.
2. Actual information on range of variation.
3. Discussion of both negative results as well as positive. Not to interpret results at this stage.
4. Availability of sufficient details of results so that others can draw their own inferences and construct their own explanations.
5. Use of S.I. units (m, s, kg, W, etc.) throughout the report.
6. Breaking up of results into logical segments by using subheads

The author must make it crystal clear to the reader which statements are observation and which are interpretation. In order to achieve this, it is suggested to have two different chapters- one for results and other for discussion. Overlay interpretation on top of data in Figures should be avoided.

4.5 Discussion

Author can start with a few sentences that summarize the most important results. The discussion section should be a brief essay in itself, addressing the following issues:

1. The major patterns in the observations that can be referred as spatial and temporal variations.

2. The relationships, trends and generalizations among the results.
3. Expectations to these patterns or generalizations, if any.
4. Likely causes (mechanisms) underlying these patterns resulting predictions.
5. Agreement or disagreement with previous work.
6. Interpretation of results in terms of background laid out in the introduction - the relationship of the present results to the original problem.
7. Implication of the present results for other unanswered problems.
8. Multiple hypotheses: There are usually several possible explanations for results. One should be careful to consider all of these rather than simply pushing the favorite one. If one can eliminate all but one, that is great, but often that is not possible with the data in hand. In that case one should give even treatment to the remaining possibilities, and try to indicate ways in which future work may lead to the discrimination.
9. Avoiding bandwagons: A special case of the above. It is suggested to avoid jumping a currently fashionable point of view unless the results really do strongly support them.
10. Things that are known or understood after reading the report.
11. Inclusion of the evidence or line of reasoning supporting each interpretation.
12. Significance of the present results.

This section should be rich in references to similar work and background needed to interpret results. However, interpretation/discussion section(s) are often too long and verbose. There may be some material that does not contribute to one of the elements listed above. In that case, this may be material that one may like to consider deleting or moving. It is suggested to break up the chapter into logical segments by using subheads.

4.6 Conclusions and Further Work

This is the last chapter of the project report. Abstract of the report should include conclusions in very brief form, because it must also include some other material. A summary of conclusions is usually longer than the final section of the abstract, and author has the space to be more explicit and more careful with qualifications. He might find it helpful to put the conclusions in point form.

It is often the case with scientific investigations that more questions than answers are produced. It must indicate whether the work carried out suggests any interesting further avenues. It should discuss the possibility of improving the work by future workers. A paragraph should be written on the practical implications of the work.

This chapter should usually be reasonably short---a few pages perhaps. As with the introduction, it is a good idea to ask someone who is not a specialist to read this section and to comment.

4.7 Appendices

If there is material that should be in the project report but which would break up the flow or bore the reader unbearably, include it as an appendix. Some things which are typically included in appendices are: 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. Thus in the appendix, one should include

1. all data used in the report
2. reference data/materials not easily available
3. tables (where more than 1-2 pages)
4. calculations (where more than 1-2 pages)
5. all key articles
6. list of all additional resource materials
7. list of equipment used for an experiment or details of complicated procedures.

4.8 References

It is tempting to omit the titles of the articles cited, and the university allows this, but think of all the times when author has seen a reference in a paper and gone to look it up only to find that it was not helpful after all. If he cites a journal article or book, the reader can go to a library and check that the cited document and check whether or not it says what he says it did. A web site may disappear, and it may have been updated or changed completely. So references to the web are usually less satisfactory. Nevertheless, there are some very useful and authoritative sources. However it is expected that such citations should not be overused. In particular, a web citation should not be used if there exists a "hard" citation. Author should give the exact URL. Thumb rules followed to refer some one's work are given below.

1. cite all ideas, concepts, text, data that are not own by the project group
2. if author makes a statement, he must back it up with his own data or a reference
3. all references cited in the text must be listed
4. list all references cited in the text in alphabetical
5. follow the format or citation style as discussed in Chapter 4.

CHAPTER 3

TEXT PROCESSING INFORMATION

It is important to note that type format of all reports should be uniform. So there is a need to follow some guidelines on typesetting and other aspects. Some of such guidelines are given below.

1. The original copy shall be typed on 75 or 80 gr./m² white paper. All photocopies shall be run on the same grade of paper. Size of paper shall be 210 x 297 mm, i.e. **A4**.
2. Only Near Letter Quality or sharper dot matrix printer or Laser printer and Ink Jet printer and electrical typewriter outputs are acceptable. In case of dot matrix printers or a typewriter, black ribbon must be used and replenished as frequently as necessary to maintain clear and high contrast constant density copy throughout the report.
3. As a character font, one should use Times, Times Roman, Courier, Geneva, Helvetica or equivalent which are available in most word processors. The font size must be 12 point in the text and at least 8 point in the figures. However, if a typewriter is used, then typing must be done on an electric typewriter and with an Elite, Pica, or Letter Gothic typeface, and preferably with a carbon film ribbon to avoid a fading effect.
4. Whenever titles and headings are to be centered the centering shall be such that 112 mm. from the left edge of the paper or 98 mm. for the right edge of the paper is the center point of the title or heading.
5. Margins of pages shall conform to the following specifications.
 - a. Left margin - 3 1/2 cm. from edge of paper.
 - b. Right margin - 2 cm. from edge of paper.
 - c. Top margin - 3 1/2. from edge of paper.
 - d. Bottom margin - 2 cm. from edge of paper.

The above margins shall be observed on charts, graphs, tables, and drawings. Folded papers will not be accepted unless there is absolutely no other way for the material to be presented.

6. Spacing of the text material shall be 1.5 with the following exceptions:

- a. Footnotes - single spacing
- b. Long biographical quotes - single spacing
- c. Extensive quotations - single spacing and indented eight (8) spaces relative to the text material.

7. Headings used in the report shall conform to the following rules:

a. Chapter Headings - CHAPTER 1, CHAPTER 2, CHAPTER 3 etc. .

- (1) Must begin a new page and be centered using the Font Size 18 with Bold Fold. Omit period at the end of the heading.
- (2) Must be typed in upper case letters.
- (3) Chapter headings are to be titled names that reflect content of the text that follows.
- (4) It should be centered and Font Size to be used is 18 with Bold Face.
- (5) Must be typed in upper case letters.
- (6) Provide 3 blank lines after the chapter name.

b. Second Headings - 2.1, 2.2, 2.3, etc.

- (1) Must be towards left margin and be typed in capital and lower case letters; i.e., the first letter of each word except conjunctions, prepositions, and articles must be a capital letter. Omit period at the end of heading.
- (2) The letter designation of the heading shall be followed by a period and two blank spaces.
- (3) Must be three spaces below preceding text and two spaces ahead of succeeding text.
- (4) Font Size to be used is 14 with Bold Face.
- (5) In case it is found that first line of the succeeding text starts from the next page, then this heading should start from the next page using page break.

c. First sub-headings - 2.2.1, 2.2.2 , etc.

- (1) Must be typed on separate lines beginning at the left margin line of the text, but need not begin a new page.
- (2) Must be typed in capital and lower case letters except conjunctions, prepositions, and articles.
- (3) The number designation of the heading shall be followed by a period and two spaces. Omit period at the end of the heading.
- (4) Must be separated from the succeeding text by three spaces.
- (5) Font Size to be used is 12 with Bold Face.

(6) In case it is found that first line of the succeeding text starts from the next page, then this sub-heading should start from the next page using page break.

d. Second sub-headings- 2.2.1.1, 2.2.1.2 etc.. (second sub-headings should be avoided if possible)

(1) Must be typed on the same line as the text it introduces beginning at the left margin line of the text.

(2) Must be typed in capital and lower case letters except conjunctions, prepositions, and articles.

(3) Must be followed by a period at the end of the heading and must be underscored by a line.

(4) The letter designation shall be followed by a period and two spaces.

(5) Font Size to be used is 12.

(6) In case it is found that first line of the succeeding text starts from the next page, then this second sub-heading should start from the next page using page break.

8. Figures and Tables: Ideally, every result claimed in the text should be documented with data, usually data presented in tables or figures. If there are no data provided to support a given statement of result or observation, one should consider adding more data, or deleting the unsupported "observation." Examine figure(s) or table(s) pertaining to the result(s).

Author should assess whether:

1. the data support the textual statement
2. the data contradict the textual statement
3. the data are insufficient to prove

The actual figures and tables should be embedded/inserted in the text, generally on the page following the page where the figure/table is first cited in the text. All figures should be numbered and cited consecutively in the text as Figure 2.1, Figure 2.2, to indicate the first and second figures in Chapter 2 respectively. Similarly it is the case with tables such as Table 3.1, Table 3.2, etc.

A caption for each figure and table is to be given with proper citation about reference, data sources, etc. and by highlighting the key findings. One should include an index figure (map) showing and naming all locations discussed in the report.

Author is always encouraged to make his own figures, including cartoons, schematics or sketches that illustrate the derived processes. He should see all his figures keeping in mind that:

1. Each figure is self-explanatory.
2. Axes of figures are labeled and the units, if used, are indicated.
3. Uncertainty are shown in data with error bars.
4. If the data are fitted by a curve, its goodness of fit should be determined.
5. Junk data must be eliminated.
6. Non-data ink must be eliminated.
7. Redundant data ink must be eliminated.
8. An effort has to be made to increase data density by eliminating non-data bearing space.
9. Whether data is sparse set that could better be expressed as a table.
10. Whether the figure distorts the data in any way.
11. Whether the data are presented in context.
12. Whether its caption guides one's eye to the "take-home lesson" of the figure.

Figures should be oriented vertically, in portrait mode, wherever possible. If they must be oriented horizontally, in landscape mode, so that one can read them from the right, not from the left, where the binding will be. Examples are given below.

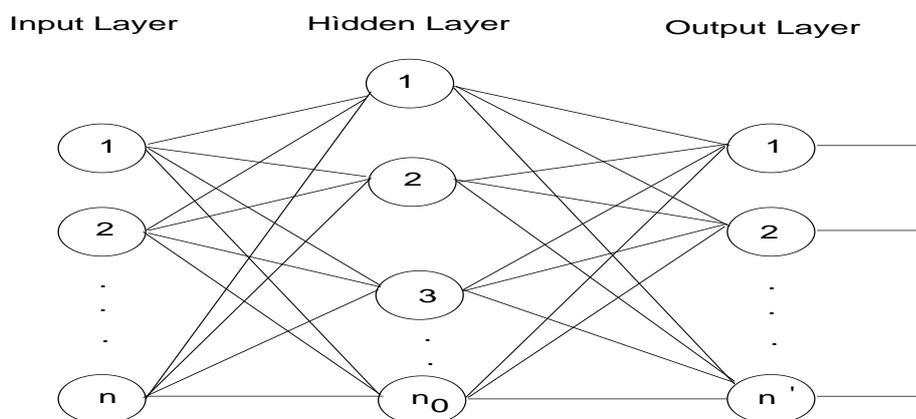


Figure 2.2. A typical neural network.

TABLE 9.12. Comparison Of Various Data Structures.

Operation	Sequential List	Linked List	AVL-Tree
Search	$O(\log n)$	$O(n)$	$O(\log n)$
Delete	$O(n)$	$O(1)$	$O(\log n)$
Insert	$O(n)$	$O(1)$	$O(\log n)$

9. Footnotes, Specially Designated Expressions and Paragraphs

- a. **Footnotes** (Footnotes should be used only if absolutely necessary): Footnote references shall be indicated in the text by an Arabic number placed superior to the of the text and immediately following the word phrase or sentence which the footnote concerns.

Footnotes shall be sequential for each page and for the entire report.

Footnotes shall be placed at the bottom of the page on which they are indicated. They shall be indented from the margin line of the text by eight spaces and placed under a broken line made of 15 dashes.

Footnotes shall be single spaced typing.

- b. **Specially Designated Expressions:** Specially designated expressions usually mean equations, formulas, etc.

Specially designated expressions shall be centered on the page according to instruction number 6 and shall be set below the preceding text and before the succeeding text by three line spaces.

The expressions shall be identified by an Arabic number in parenthesis placed opposite the expression and in line with the right margin of the text. They should be numbered in each chapter in the order of their appearance together with the chapter number, e.g. (6.14). The expression in the body of the report can be referred to (6.14).

Avoid to start a sentence in the text with the expression number. This can be avoided by using changing the voice.

- 10. Pagination and Paragraphs:** Each page in the report or dissertation is expected to bear a number. Only one side of the paper may be used. The following plan should be used exclusively:

- a. The preliminary section, including the title page; copyright page, if any; foreword, preface, or acknowledgements; table of contents; etc., should be numbered, using lower case Roman Numerals, e.g., i, ii, iii, etc. The title page counts as Page i, but the number does not appear. The sequence of the preliminary section is as follows:

Title Page	Page i - number does not appear
Declaration.....	Page ii
Certificate.....	Page iii
Acknowledgements.....	Page iv
Abstract	Page v
Table of Contents	Page vi
List of Tables.....	Page vii
List of Figures.....	Page viii
List of Symbols	Page ix

For the remainder of the report, Arabic numbers are used. Each page must be numbered. Page numbers are to be placed 2 centimeters from the top and right hand margins on the pages. All pages for illustrations, tables, appendices, bibliography, etc are included. Use of suffixes, such as 25a, 25b ... are not allowed. The numbering in the main body should begin with Page 1 and run consecutively to the last page. No punctuation, such as dash or a period, should accompany the page number.

b. Paragraphs: Paragraph indentations must be uniformly eight letter spaces long. Series of paragraph items which are to be listed without headings under any of the regular headings may, for clarity be designated as follows: (A), (B), (C), No period is necessary between the parenthesis and the first sentence. Series of items listed in the interior of a paragraph may be designated as follows: (a), (b), (c). A period must not follow the parenthesis. Each item must begin with a lower case letter and must end with a semi-colon, unless it is a complete sentence. A new paragraph must not begin at the bottom of a page if there is not sufficient space for at least two lines.

11. Size of Thesis: There is no limit on the number of pages to be used in the report. But it should be complete in all respect. However it is expected that the number of pages in the report will not exceed 100 pages of typed matter reckoned from the First page of Chapter 1 to the last page of the Appendix.

12. Binding Specifications: Beside the supervisor's and personal copies, two copies of the project report should be bound in light Blue color (Matt finish) hard rexin binding with golden engraved letters. Ensure that the side face of thickness of the thesis should have the surname of the students, and month of submission at top and bottom edge respectively.

13. Number of Copies: Two hardcopies (one for supervisor, one for departmental library) along with softcopy of the thesis are to be submitted before the due date to the Department.

CHAPTER 4 CITATION STYLE

In a project report there is a need to make references in the text, and relate them to notes, or to a list of bibliographical references, at the end of the description of the work. A number of elements must be present for a document to be identifiable with certainty. It is better to give extra or redundant information than to omit vital features.

4.1 Citation of Books

The standard format or citation Style for a book is

- author(s)
- title
- edition (if applicable)
- place of publication
- publisher
- date

Some citation styles omit place of publication, but it is useful, e.g. when filling out inter-library loan requests, where it can simplify and limit the searching process. Examples (books) are given below.

one author: Williams, G. *State and Society in Onco State, Nigeria*, Afrographika, 1980.

two authors: Phizacklea, A & Miles, R. *Labour and Racism*. London, Routledge & Kegan Paul, 1980.

3 + authors: O'Donovan, P., et al. *The United States*. Amsterdam, Time-Life International, 1966.
('et al.' is a Latin abbreviation meaning 'and others'.)

no authors: *Generals and Tupamaros: The Struggle for Power in Uruguay, 1969-1973*. London, Latin America Review of Books, 1974.

one editor: Oyediran, O., ed. *Nigerian Government and Politics under Military Rule, 1966-1979*. London, Macmillan, 1979. (Contemporary African Issues)
('Contemporary African Issues' is a 'series note'.)

To some extent, the details of punctuation are up to the author as long as he is consistent. He may, for instance, decide to write authors' names in upper case (capitals), or to give their forenames in full ,if it is available.

The purpose of using italics is not just to give emphasis, but to show which element in the citation is a separately published unit. It is especially important when one is citing a section (an article, a paper, or a chapter) in a collection or other composite work, e.g.

Watson, R. 'Racial and Ethnic Relations', in Anderson, R. and Sharrock, W.W., eds., *Applied Sociological Perspectives*. London: Allen & Unwin, 1984. pp.3-65.

If one makes this kind of reference correctly, the reader will immediately know what is the book to look for (i.e. Anderson and Sharrock) and not waste time searching for a non-existent (or a different) work with the title, *Racial and Ethnic Relations*. Inverted commas are often used to signal a part or contribution in a larger work - they show that it is not separately published in its own right, and it is **not** good practice to use them to show a book title.

4.2 Citation of Periodicals

The same principles that apply to a book apply when he is citing articles from **periodicals** - journals, magazines, newspapers, reviews, etc.

For an **article** format is given below.

- author(s)
- title of the article
- title of the periodical, or its *accepted* abbreviation.
- date , volume, and part number of the issue in which it appears
- page numbers

Examples are given below.

Davis, R.D. 'Sludge disposal - keeping it safe'. *Water and waste treatment*, 1984, 27 (9) 38-42
or
Zlotnik, M. D. 'Chernenko succeeds'. *Problems of Communism* 33 (2) March-April 1984, pp.17-31.

The detail of order and punctuation may vary between one writer and another, or with the same writer on different occasions; the important thing is to decide firmly at the start how the author is going to proceed, and stick to that style. Publishers of books and journals have their own 'house-styles', and editorial staff to apply them rigorously; for these purposes, clarity and consistency are enough -- one should not cite something unless the author is quite sure, he has enough information for a reader to identify it. It is not necessary to use Roman numerals for volume numbers, even if the periodical the author is citing uses them itself, or if he has seen them in a citation elsewhere. Single inverted commas are used again here, to show which is the article, and which is the periodical title.

It is sometimes needed to cite an issue by date, rather than part number, even if it has one, e.g.

Wood, Nick. 'Multiracial Study Pioneer in Grenada Coup'. *Times Educational Supplement*, 28th October 1983, p.1.

or to cite the whole of an issue, rather than an article:

Curriculum, 1980, vol 1(3).

4.3 Attributed or Indirectly Quoted References

Sometimes it is needed to refer to ideas or expressions which are **attributed** to one writer in the work of another, without a precise page reference being given. For the sake of clarity, and sometimes in order to avoid any suggestion of plagiarism, it is suggested to make reference to the imperfectly cited author in a form such as 'quoted in', or 'discussed by', followed by a precise reference to the source in which it is found. Here is an example of the kind of text which may give this problem:

As Thomas Hughes' popular school novel *Tom Brown's Schooldays* (1857) spelt out, there was on the one hand, the 'strength and courage and wisdom of fathers and brothers and teachers', and on the other, 'the love, tenderness and purity of mothers and sisters and wives'. Robert Leeson, *Reading and Writing*, Collins, 1985, p.80.

Unless it is prepared to read *Tom Brown's Schooldays* to find the quotation, it is both more accurate and more honest to cite Leeson's book, than to refer vaguely to Hughes's as if the quotation has been seen in its context.

4.4 Signaling Citations in the Text

There are two ways of doing this, the Numeric system and the Harvard system, and both are used in published books and journals. It is suggested to choose one and to stick to it! Detailed recommendations are given in:

British Standard BS 5606 : 1978, *Citing publications by Bibliographical references*. DC/WIS British Standards

4.4.1 The Numeric System

The **Numeric System**, is more or less self-explanatory. Documents cited are numbered in the order in which they are referred to in the text, and the number inserted every time that document is mentioned e.g.

'A recent study (26) shows...'

'Strickberger [26] demonstrates'.

'Strickberger²⁶ demonstrates'.

In the notes at the end, this reference would appear as:

25. Asimov, I. *The Genetic Code*. London, 1964.

26. Strickberger, M.W. *Genetics*. New York, London, 1968.

27. Stern, C. *Principles of Human Genetics*. 3rd ed. San Francisco, 1973.

4.4.2 The Harvard System

One standard method of formatting citations is called the **Harvard System**. In this style, the author's surname and the date of publication are inserted in the text, e.g.

'Johnson (1974) describes...'

'In a recent study (Johnson 1974) it is claimed'

'This review (Johnson et al. 1976) includes...'

When these references are brought together at the end they are listed alphabetically, with the date immediately after the author's name, e.g.

Feigl, F. 1958. *Spot tests in organic analysis*. London, Cleaver- Hume. 5th ed.

Howells, W.W. 1951. 'Factors of human physique', *American Journal of Physical Anthropology*, 9, pp. 159-192.

Johnson, T.P 1974. 'Enzyme polymorphism', *Science* 184, 28-37.

Johnson, T.P., Harris, A. and Tupper, Z. 1976. 'Enzymology: a literature review, 1973-1983', *Australian Enzymologist*, 15, 100-135'.

4.5 Motion pictures, audio and video recordings, radio and television programmes (using the Harvard System)

As a general rule, motion pictures, audio and video recordings, radio and television programmes, and software are identified by their titles. Therefore, when cited within a text, citations from these sources include the title plus the date of production, recording, broadcast or transmission. (Note that titles of episodes of a programme are given in single quotation marks, but the title of the programme is given in italics), e.g.

Citizen Kane (1941)

'A Sheep called Dolly' (11 March 1997)

For the purposes of the reference list, the full reference will give the title; the date of production, recording, broadcast or transmission; the publisher; the place of production, recording, broadcast or transmission; special credits (if any); and the format (in brackets).

Citizen Kane 1941, RKO Radio, Hollywood, producer and director Orson Welles (motion picture).

'A Sheep called Dolly' 11 March 1997, *Heart of the Matter*, BBC Television, London (television programme).

4.6 CD-ROMs (using the Harvard System)

Citations for CD-ROMs can take two forms, depending on whether he has information about the author(s) of the material he is citing. Where a CD-ROM consists of a compilation of individually authored articles, a database of previously published material, or has identifiable authors, the citation in the text includes the family name(s) of the author(s), or the name of the 'authoring' organisation, and the date of publication.

Orr (1999)

Central Statistical Office (1995)

In the reference list, the full reference for such sources will list the family name(s) and initial(s) of the author(s), the date of publication, the title of the document or article (within single quotation marks), the title of the publication (if any, italicised), the volume and issue numbers, page information (if any), followed by the title of the CD-ROM, the vendor and the frequency of updating (if known), and the format (in brackets). For some sources not all of this information will be available, in which case it is suggested to include as much information as he has.

Orr, D. 16 November 1999, 'Bollywood's goddess bows to tradition', *The Times*, p.22, The Times and the Sunday Times Compact Disc Edition, Chadwyck Healey, quarterly updating (CD-ROM).

Social Statistics Section 1995, 'Households and Families', *Social Trends*, Central Statistical Office (CD-ROM).

If the authors are not identifiable, or the reference is to an entire CD-ROM database, then the citation in the text includes the title of the CD-ROM and the date of publication.

Travel Geography (1998)

The corresponding reference in the reference list gives the title of the CD-ROM, the date of publication, the producer, the vendor and the frequency of updating (if known), as well as the format (in brackets). Again, for some sources not all of this information will be available, so include as much as one can have.

Travel Geography 1998, The Travel Training Company, Woking, Surrey (CD-ROM).

4.7 Online material (using the Harvard System)

A standard method for the citation of electronic sources of material has not yet been agreed upon. The following recommendations are suggestions only. For those intending to submit papers to scholarly journals, the method used by the journal should be investigated first.

In the text, the citation for online material includes the family name(s) of the author(s), or the name of the 'authoring' organization, and the document date or date of last revision (which may require the date and the month as well as the year).

Weiss (19 May 1996)

Office for National Statistics (1997)

As online material is continually updated or revised, the material the author refers to may have undergone change since he cited it. Therefore, the date that he accessed the material must be included in the reference list. In online references it is not necessary to indicate the format of the material because this is made obvious by including the address of the site.

In the reference list, the full reference lists the family name and initial(s) of the author(s), the document date or date of last revision, the title of the document (in single quotation marks), the title of the complete work (if any, in italics), the address (preceded by 'Available from:'), and the date the material was accessed (in brackets).

Weiss, P.L. 19 May 1996, 'Crime and punishment: is man responsible for his actions?', *Christian Philosophy Made Simple*. Available from: <http://members.aol.com/crime.htm> (accessed 18 January 2000).

Office for National Statistics 4 October 1999, 'The UK in figures: population and vital statistics', *Government Statistical Service*. Available from: <http://www.statistics.gov.uk/stats/pop.htm> (accessed 20 January 2000).

In the reference list, the full reference to conference papers, presentations and addresses is presented as follows:

Stivens, M. 9 September 1998, 'Gendering the global and the anti-global: Asian modernities, "Asian values" and "The Asian family"', Paper presented to *ICCCR International Conference 'Transnationalism: an Exchange of Theoretical perspectives from Asian Anthropology'*, at the University of Delhi. Available from: <http://les.man.ac.uk/Transnationalism/stivens.htm> (accessed 25 January 2000).

4.8 E-mail

Citations of material from an e-mail source should be treated as personal communications and, therefore, cited in the text only. One should not include the e-mail address of the author.

CHAPTER 5

CROSSCUTTING ISSUES

In this chapter we like to provide various issues that should be addressed at the time of writing the project report. Among the various issues, we like to discuss three important ones and they are (i) About Readers of Report (ii) Order of Report Writing and (iii) Avoiding Ambiguity.

5.1 Readers of Report

It should be clear to the author that the project report is not only the partial requirement for the award of the B. Tech Degree but also is permanent assets of the university which can be referred by the researchers within the country and outside the country. So, the project group must know about the readers of the project report. Readers are

1. Researchers working in analogous field areas elsewhere in the world.
2. Researchers working in the field area, but with different techniques.
3. Researchers working on the same interval of geologic time elsewhere in the world.
4. All other researchers using the same technique.
5. If the study encompasses an active process, researchers working on the same process in the ancient record.
6. Conversely, if the study is based on the rock record, people studying modern analogs.
7. People writing a synthesis paper on important new developments in the field.
8. People applying earth science to societal problems (i.e. earthquake hazard reduction, climate warming) who will try to understand the report.
9. Potential reviewers of the report examination committee.

5.2 Order of Writing

The report is not written in the same order as it is presented in. The following gives an idea how to proceed.

1. At first step, one organizes the report as a logical argument before he begins writing
2. Then, figures are made to illustrate the argument

3. In the next step, one should think about the main chapters which are: background to the argument (introduction); describing the information to be used in the argument, and making points about them (observations), connecting the points regarding the info (analysis), summing up (conclusions).
4. For each chapter, it is suggested to outline the main elements in sections, subsections
5. Now author is ready for writing, choosing options in the following hierarchy - paragraphs, sentences, and words.

But this is not the only way that one can start writing the report. Following is another approach.

1. Author first writes up a preliminary version of the background chapter first. This serves as the basis for the introduction in the report.
2. As data is collected, author writes up the methods chapter. One should be sure to include a description of the research equipment and relevant calibration plots.
3. When there are some data, it is suggested to start making plots and tables of the data. These will help to visualize the data and to see gaps in the data collection. If time permits, author should go back and fill in the gaps. He should be sure enough to make adequate statistical tests of the results.
4. Once a complete set of plots and statistical tests are done, the plots and tables are arranged in a logical order. Figure captions are written for the plots and tables. As much as possible, the captions should stand alone in explaining the plots and tables. Many scientists read only the abstract, figures, figure captions, tables, table captions, and conclusions of a paper. One should be sure that the figures, tables and captions are well labeled and well documented.
5. Once plots and tables are complete, the results chapter is written. Writing this chapter requires extreme discipline. One must describe the results, but he must NOT interpret them. One should be factual and orderly in this section, but try not to be too dry.
6. Once the results chapter has been written, author can move on to the discussion chapter. This is usually fun to write, because now he can talk about his ideas about the data. If he can come up with a good cartoon/schematic showing his ideas, he should do so. Many papers are cited in the literature because they have a good cartoon that subsequent authors would like to use or modify.
7. In writing the discussion chapter, one should be sure to adequately discuss the work of other authors who collected data on the same or related scientific questions. He should be sure to discuss how their work is relevant to his work. If there were flaws in their methodology, this is the place to discuss it.
8. After the data is discussed, the conclusions chapter can be written. In this chapter, author takes the ideas that were mentioned in the discussion chapter and tries to come to some closure. If some hypothesis can be ruled out as a result of the work, he should say so. If more work is needed for a definitive answer, that also has to be spelt out.

Recommendations for further research or policy actions are to be written in this chapter.

9. One should write the abstract last.

5.3 Avoiding Ambiguity

Author must avoid any ambiguity in the report. He should

1. not allow run-on sentences to sneak into the writing; he should try semicolons.
2. avoid nested clauses/phrases.
3. avoid clauses or phrases with more than two ideas in them.
4. not use double negatives.
5. not use dangling participles (i.e. phrases with an "-ing" verb, in sentences where the agent performing the action of the "-ing" verb is not specified: " After standing in boiling water for two hours, examine the flask.").
6. make sure that the antecedent for every pronoun (it, these, those, that, this, one) is crystal clear. If in doubt, use the noun rather than the pronoun, even if the resulting sentence seems a little bit redundant.
7. ensure that subject and verb agree in number (singular versus plural).
8. be especially careful with compound subjects. He should be especially careful with subject/verb agreement within clauses.
9. avoid qualitative adjectives when describing concepts that are quantifiable ("The water is deep." "Plate convergence is fast." "Our algorithm is better.") Instead, he should quantify. ("Water depths exceed 5km.")
10. avoid noun strings ("acoustic noise source location technique").
11. not use unexplained acronyms. He should spell out all acronyms the first time that are use in the report.

FORMAT OF COVER PAGE (Hard Bound)

TITLE OF PROJECT REPORT

by

Names of Students (Roll No)

Department of

Name of Institute

Address of Institute

Month, Year

(Example of Title Page)

TITLE OF THE PROJECT

by

Full Name (Roll No.)

Submitted to the Department of <Department's Name>

in partial fulfillment of the requirements

for the degree of

Bachelor of Technology

in

<Discipline>

<Institute's Logo>

<Institute Name>

U.P. Technical University

<Month, Year>

(Example)

TABLE OF CONTENTS

	Page
DECLARATION	ii
CERTIFICATE	iii
ACKNOWLEDGEMENTS	iv
ABSTRACT	v
LIST OF TABLES.....	vii
LIST OF FIGURES.....	viii
LIST OF SYMBOLS	ix
LIST OF ABBREVIATIONS	x
CHAPTER 1 (INTRODUCTION, BACKGROUND OF THE PROBLEM, STATEMENT OF PROBLEM etc.).....	1
1.1.	5
1.2.	8
CHAPTER 2 (OTHER MAIN HEADING)	13
3.1.	15
3.2.	17
3.2.1.	19
3.2.2.	20
3.2.2.1.	21
3.2.2.2.	22
3.3.	23
CHAPTER 4 (OTHER MAIN HEADING)	30
4.1.	36
4.2.	39
CHAPTER 5 (CONCLUSIONS)	40
APPENDIX A	45
APPENDIX B	47
REFERENCES... ..	49

(Example of Certificate)

CERTIFICATE

This is to certify that Project Report entitled “E-Post Office” which is submitted by Rakhi Maheshwari, Minakshi Singh, Neha Sharma and Ranjana Singh in partial fulfillment of the requirement for the award of degree B. Tech. in Department of Computer Science & Engineering of U. P. Technical University, is a record of the candidate own work carried out by him under my/our supervision. The matter embodied in this thesis is original and has not been submitted for the award of any other degree.

Date:

Supervisor

(Example of Declaration)

DECLARATION

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which to a substantial extent 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.

Signature

Name

Roll No.

Date

(Example of Acknowledgement)

ACKNOWLEDGEMENT

It gives us a great sense of pleasure to present the report of the B. Tech Project undertaken during B. Tech. Final Year. We owe special debt of gratitude to Professor Anshuman Singh, Department of Computer Science & Engineering, College of Engineering, Lucknow for his constant support and guidance throughout the course of our work. His sincerity, thoroughness and perseverance have been a constant source of inspiration for us. It is only his cognizant efforts that our endeavors have seen light of the day.

We also take the opportunity to acknowledge the contribution of Professor M. S. Dhoni, Head, Department of Computer Science & Engineering, College of Engineering, Lucknow for his full support and assistance during the development of the project.

We also do not like to miss the opportunity to acknowledge the contribution of all faculty members of the department for their kind assistance and cooperation during the development of our project. Last but not the least, we acknowledge our friends for their contribution in the completion of the project.

Signature:

Name :

Roll No.:

Date :

Signature:

Name :

Roll No.:

Date :

(Example of Abstract)

ABSTRACT

The abstract is to be in fully-justified italicized text, at the top of the left-hand column as it is here, below the author information. Use the word "Abstract" as the title, in 12-point Times, boldface type, centered relative to the column, initially capitalized. The abstract is to be in 10-point, single-spaced type, and may be up to 3 in. (7.62 cm) long. Leave two blank lines after the abstract, then begin the main text. All manuscripts must be in English.

An Abstract is required for every paper; it should succinctly summarize the reason for the work, the main findings, and the conclusions of the study. The abstract should be no longer than 250 words. Do not include artwork, tables, elaborate equations or references to other parts of the paper or to the reference listing at the end. The reason is that the Abstract should be understandable in itself to be suitable for storage in textual information retrieval systems.

CHAPTER 1
INTRODUCTION

(Example)

LIST OF SYMBOLS

$[x]$	Integer value of x.
\neq	Not Equal
\in	Belongs to
€	Euro- A Currency
$-$	Optical distance
$-o$	Optical thickness or optical half thickness

(Example)

LIST OF ABBREVIATIONS

AAM	Active Appearance Model
ICA	Independent Component Analysis
ISC	Increment Sign Correlation
PCA	Principal Component Analysis
ROC	Receiver Operating Characteristics

(Example of **References using the Numeric System**)

REFERENCES

Examples of Journal Article referencing:

1. Drucker, D. C., "Photoelastic Separation of Principal Stresses by Oblique Incidence", *Journal of Applied Mechanics*, Vol. 65, pp. 156-160, 1943.
2. Maiers, J., and Sherif, Y. S. , "Application of Fuzzy Set Theory," *IEEE Transactions on Systems, Man, and Cybernetics*, Vol. SMC-15, No.1, pp. 41-48, 1985.

Example of Book referencing:

3. Doe, N., *Control System Principles*, New York: John Wiley, 1999.

Example of Referencing of an Article in a Book:

4. Hwang, C. J., "Rule-based Process Control," in E. Kumarmangalam and L. A. Zadeh (Eds.), *Approximate Reasoning in Intelligent Systems, Decision and Control*, pp. 145-158, Oxford: Pergamon Press, 1987.

Example of referencing of a B. Tech. Report:

5. Nayak, T., "Application of Neural Networks to Nuclear Reactors," M.Sc. Report, U.P. Technical University, 2005.

Example of referencing of a Ph. D. Dissertation:

6. Muskîn, H. L., "Development of A Knowledge-Based System for a Nuclear Power Plant," Ph.D. Dissertation, U. P. Technical University, 2003.

Example of referencing of a Conference Paper :

7. Lokhande, R., Arya, K. V., and Gupta, P., "Identification of Parameters and Restoration of Motion Blurred Images", *Proceedings of the 2006 ACM Symposium on Applied Computing (SAC 2006)*, pp. 89-95, Dijon, France, April 2- 7, 2006.

Example of referencing of a Paper presented at Conference but not Published :

8. Lokhande, R., and Gupta, P., "Identification of Parameters of Motion Images", presented at 5th International Conference on Cyber Systems, New Delhi, India, April 12- 17, 2004

Example of referencing of a Report [Technical, Internal, or Memoranda]: :

9. Das, A. R., Murthy D., and Badrinath J., A Comparison of Different Biometrics Traits, RSRE Memorandum No. 4157, RSRE Malvern, 2001.

Example of referencing of a Manual

10. Bell Telephone Laboratories Technical Staff, Transmission System for Communications, Bell Telephone Laboratories, 1995.

Example of referencing of a Class Note

11. "Signal integrity and interconnects for high-speed applications," class notes for ECE 497-JS, Department of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign, Winter 1997.

Example of referencing of a Private Communication

12. Banerjee, T., (Private Communication), 1998

Example of referencing of an Article from Internet

13. Biometrics Group, Indian Institute of Technology Kanpur, "Multimodal Biometrics System," December 2006, <http://www.cse.iitk.ac.in/users/biometrics.html>
14. Gupta, P. (pg@iitk.ac.in), "Biometrics System," Usenet post to sci.electronics.design, July 4, 2007.

Example of referencing of an Article from Catalog

15. Catalog No. MWM-1, Microwave Components, M. W. Microwave Corp., Brooklyn, NY

Example of referencing of an Article from Application Note

16. Hewlett-Packard, Appl. Note 935, pp. 25-29.

Example of referencing of an Article from Application Note

17. Kar, K. and Majumder, D., "Fuzzy Controller Component," U. S. Patent 23,160,040, December 21, 2006.

APPENDIX

FORMAT OF CD CONTAINING COMPUTER SOFTWARE

Each software developed by the Project's Group should be burnt in a CD with proper documentation. The CD should contain files containing the source code, one or more sample input and corresponding output separately. Other than these there must be another file named "READ.ME". In this ASCII text file, the following sections must be appear.

Author's Identity. A file should contain the name of each project group member along with the Supervisor's name.

Files in the CD. In this section, the names of the files together with their contents must be listed.

Hardware Requirements. In this section, we should note down the hardware requirements along with any special type of equipments/ components such as graphics card, numeric coprocessor, mouse, RAM capacity etc. needed to run the software.

Software Requirements. In this section, the operating system, the compiler, linker, and the libraries etc. necessary to compile and link the software must be listed. There is a need to obtain the necessary license from the copyright owner before one incorporates the copyrighted material file in CD.