

# **Faculty of Engineering**

## **Final Year Project Work Guidelines B.E. (Information Technology), 2012 Course (With effect from Academic Year 2015 - 16)**



**SAVITRIBAI PHULE PUNE UNIVERSITY**

**PREPARED BY:**

**B.O.S. - Information Technology, Savitribai Phule Pune University**

## Faculty of Engineering

### Final Year Project Work Guidelines B.E. (Information Technology), 2012 Course (With effect from Academic Year 2015 - 16)



#### Document Control

|                   |  |
|-------------------|--|
| Reference Code    | SPPU/Faculty of IT/Project Work Operational Manual |
| Version No        | 1.0  |
| Compliance Status | In Process   |
| Revision Month    | September 2015                                     |
| Review Period     | Yearly   |

|             | Author                  | Authorizer               |
|-------------|-------------------------|--------------------------|
| Name        | Mr. G. R. Pathak        | Prof. (Dr.) G.V. Garje   |
| Designation | Chairman – Project Work | Chairman, BOS – IT, SPPU |

#### Document History

|              |                |                   |
|--------------|----------------|-------------------|
| Revision No. | Revision Date  | Reason for Change |
| Nil          | Not Applicable | Not Applicable    |

**SAVITRIBAI PHULE PUNE UNIVERSITY**

**PREPARED BY:**

**B.O.S. in Information Technology, Savitribai Phule Pune University**

<<College Name>>

**Department of Information Technology**

## Final Year Project Work

Academic Year: <<Academic Year>>

|                |   |  |
|----------------|---|--|
| Project Title  | : |  |
| Project Area   | : |  |
| Internal Guide | : |  |

<<College Logo>> here

## SYLLABUS

### 414460 : PROJECT PHASE – I

#### SEMESTER – I

##### Teaching Scheme:

Tutorial : 2 Hours/Week

##### Examination Scheme:

Term work : 50 Marks

**Prerequisites:** Project Based Seminar.

##### Course Objectives :

1. The practical implementation of theoretical knowledge gained during the study from FE to TE.
2. The student should be able implement their ideas/real time industrial problem/ current application of their engineering branch which they have studied in curriculum.
3. To build confidence in the student what he has learnt theoretically.
4. The dependent study of the state of the art topics in a broad area of his/her specialization.

##### Course Outcomes :

At the end of this course the student should be able to show preparedness to study independently in chosen domain of Information Technology and programming languages and apply to variety of real time problem scenarios.

## CONTENTS

**Project Based Seminar (PBS)** helped students to gather, organize, summarize and interpret technical literature with the purpose of formulating a project proposal in third year as part of course **314456 : Seminar& Technical Communication Laboratory**. They also submitted a technical report summarizing state-of-the-art on an identified topic.

**B.E. Projects 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 Project Phase-I the student will undertake same project over the academic year, which will involve the analysis, design of a system or sub system in the area identified earlier in the field of Information Technology and Computer Science and Engineering. In some cases; if earlier identified project is not feasible; a new topic must be formulated in consultation with the guide and project coordinator.

The project will be undertaken preferably by a group of **3-4 students** who will jointly work and implement the project. The group will select a project with approval from a committee formed by the department of senior faculty to check the feasibility and approve the topic.

##### Review Committee:

The Head of the department/Project coordinator shall constitute a review committee for project work for project group; project guide would be one member of that committee by default. There shall be at least two reviews in semester-I and semester-II by the review committee. The students or project group shall make presentation on the progress made by them before the committee. The record of the remarks/suggestions of the review committee should be properly maintained and should be made available at the time of examination.

Each student/group is required to give presentation as part of review for 10 to 15 minutes followed by a detailed discussion.

**Review 1: Finalization of scope** – the objectives and scope of the project should be finalized in second week of their academic semester. Should finalize list of required hardware, software or other equipment for executing the project, test environment/tools.

**Review 2: Finalization of SRS** – High level design, planning with CPM/PERT chart etc in the sixth week of their academic semester.

### **Guidelines for Students and Faculty:**

#### **Project Review Committee:**

1. This committee will be responsible for evaluating the timely progress of the projects and communicating the progress report to the students.
2. As far as possible Students should finalize the same project title taken for Project Based Seminar.
3. Review committee should conduct “Feasibility Review” in first week after commencement of the term. Review committee should finalize the scope of the project.
4. If change in project topic is unavoidable then the students should complete the process of project approval by submitting synopsis along with the review of important papers. This new project topic should be approved by review committee.

#### **Term Work:**

1. The term work will consist of a report prepared by the student on the project allotted to them.
2. They should use appropriate tools for the preparation of the report like project planning, UML diagram, testing tools, referencing tools etc.

#### **Report Structure**

- Contents
- List of Abbreviations
- List of Figures
- List of Graphs
- List of Tables
  1. Introduction and aims/motivation and objectives
  2. Literature Survey
  3. Problem Statement
  4. Project Requirements
  5. System Analysis Proposed Architecture/ high level design of the project
  6. Project Plan
  7. Conclusion
- References
- Appendices
  - A. Base Paper(s)
  - B. Plagiarism Report from any open source

#### **Evaluation Guidelines:**

A panel of examiner will evaluate the viability of project / project scope. The panel will also verify that all the suggestions/comments in the review document are taken care and accordingly allot the term work marks. Oral examination in the form of presentation will be based on the project work completed by the candidates. Preliminary report must also be presented during the oral examination.

## SYLLABUS

### 414467 : PROJECT WORK

#### SEMESTER – II

##### Teaching Scheme:

Tutorial : 6 Hours/Week

##### Examination Scheme:

Term work : 50 Marks

Oral : 100 Marks

**Prerequisites :** BE-Project Phase I – Semester I, Project Based Seminar

##### Course Objectives :

1. To expose students to product development cycle using industrial experience, use of state of art technologies.
2. To encourage and expose students for participation in National/International paper presentation activities and funding agency for sponsored projects.
3. Exposure to Learning and knowledge access techniques using Conferences, Journal papers and anticipation in research activities.

## CONTENTS

##### Reviews 3

Implementation Status (50% implementation expected)

##### Reviews 4

Final Project Demonstration, Project Report and proper Result analysis

**Project Exhibition:** All TE students must see all the projects in the exhibition

The group will submit at the end of semester II.

- a) The Workable project.
- b) Project report (in Latex/Lyx/latest Word) in the form of bound journal complete in all respect – 1 copy for the Institute, 1 copy for guide and 1 copy of each student in the group for certification.

The project report contains the details.

1. Problem Definition
2. Requirement Specification
3. System Design Details (UML diagrams) Dataflow Diagrams/ Algorithm, Protocols used
4. System Implementation – Code documentation
5. Test Result and Procedure – Test Report
6. Conclusions.
7. Appendix
  - a. Tools used
  - b. References
  - c. Papers published/certificates

Plagiarism Report of paper and project report from any open source tool

**At least One paper should be published in reputed National/International Conference and or National/International Journal**

# **Savitribai Phule Pune University**

## **<<College Name>> Department of Information Technology**

### **INDEX**

1. Undertaking by Students.
2. Project Schedule
3. Group Details
4. Abstract Format
5. Monthly Planning Sheet (Semester – I )
6. Project Review – I Check List
7. Performance Evaluation Sheet – I (Review – I)
8. Project Review – II Check List
9. Performance Evaluation Sheet – II (Review – II)
10. Monthly Planning Sheet (Semester – II )
11. Project Review – III Check List
12. Performance Evaluation Sheet – III (Review – III)
13. Project Review – IV Check List
14. Performance Evaluation Sheet – IV (Review – IV)
15. Evaluation Summery Sheet (Review – I to IV)
16. Project Report Format
17. Participation in Project Competition.
18. Paper Publications. (If any)
19. Examination Evaluation Guidelines
20. Examination Evaluation Sheet (Semester-I)
21. Examination Evaluation Sheet (Semester-II)

# SEMESTER - I



**<<College Name>>**  
**Department of Information Technology**

**UNDERTAKING BY STUDENTS**

We, the students of B.E.I.T. are hereby assure that we will follow all the rules and regulations of SPPU related to the project work for the academic year <<academic year>>. The Project entitled-

---

---

will be fully designed and developed by us and no part of the project/full project will be designed and developed by any external entity or copied from some external resources. We are fully aware that copying or taking help of any external agency in the development of our project is totally unethical and illegal. The examiners have / University has full rights to initiate an action against us as per University norms if involved in unfair/illegal/unethical work.

| Sr. No. | Roll No. | Name of Student | Signature |
|---------|----------|-----------------|-----------|
| 1       |          |                 |           |
| 2       |          |                 |           |
| 3       |          |                 |           |
| 4       |          |                 |           |

# Savitribai Phule Pune University, Pune

<<College Name>>

Department of Information Technology

(With effect from Academic Year 2015-16)

## Rules & Regulations

1. All students must enter the correct information in the work book.
2. All the entries in the project work book must be verified by the concerned project guide.
3. Students must report to their respective guide on project day as per the time table.
4. Activities of the project work should be completed as per the project plan only.
5. Project group must submit soft copies of Project Abstract, Project Report and Publications in PDF format only.
6. Project group members submit **two** hard copies of Project Report in the format provided by department.
7. Project work book must be brought at the time of Project Reviews & Project Examination.
8. Any changes, if any, must be countersigned by the concerned project guide.
9. For project reviews and project examination, all students must report 15 minutes before the scheduled time.
10. For any query, concerned guide should be consulted.

# Savitribai Phule Pune University, Pune

<<College Name>>

Department of Information Technology

(Academic Year <<Academic Year>>)

## PROJECT WORK SCHEDULE

| Sr. No.              | Activity Scheduled  | Date                         |
|----------------------|---|------------------------------|
| <b>SEMESTER - I</b>  |   |                              |
| 1.                   | Registration of Project Groups  | <b>Week 2</b>                |
| 2.                   | Project Topic Submission  | <b>Week 3</b>                |
| 3.                   | Allocation of Guide   | <b>Week 4</b>                |
| 4.                   | Submission of Abstract to Project Guide and Project Coordinator in the Prescribed Format              | <b>Week 4</b>                |
| 5.                   | Project Review - I  | <b>Week 6</b>                |
| 6.                   | Project Review - II   | <b>Week 10</b>               |
| 7.                   | Verification of Project Work Book By Internal Guide (before submission of Preliminary Project Report) | <b>Week 11</b>               |
| 8.                   | Submission of Final Preliminary Project Report in Prescribed Format                                   | <b>Week 12</b>               |
|                      | External Term-work Evaluation (After Theory Examination)  | <b>As per Univ. Schedule</b> |
| <b>SEMESTER - II</b> |   |                              |
| 1.                   | Project Review - III  | <b>Week 6</b>                |
| 2.                   | Project Review - IV   | <b>Week 10</b>               |
| 3.                   | Submission of Draft Copy of Final Project Report to Guide   | <b>Week 11</b>               |
| 4.                   | Verification of Project Book By Internal Guide (before submission of Final Project Report)            | <b>Week 11</b>               |
| 5.                   | Submission of Final Project Report in Prescribed Format   | <b>Week 12</b>               |
|                      | Final Project Examination (After Theory Examination)  | <b>As per Univ. Schedule</b> |

&lt;&lt;College Name&gt;&gt;

Department of Information Technology

(Academic Year: &lt;&lt;Academic Year&gt;&gt;)

Project Group No. :

A1-College Code (e.g.A1-23)

Project Title

## GROUP DETAILS:

| Sr. No. | Roll No. | Name of the Student | Mobile No. | Email id | T. E. Result |
|---------|----------|---------------------|------------|----------|--------------|
| 1       |          |                     |            |          |              |
| 2       |          |                     |            |          |              |
| 3       |          |                     |            |          |              |
| 4       |          |                     |            |          |              |

Name &amp; Signature Internal Guide

Name & Signature of External Guide  
(if applicable)Signature of Head of  
Department

Mobile No. :

Mobile No. :

Department of Information

Email id :

Technology

Email id :

Company Name :

<<College Name>>  
 Department of Information Technology  
 (Academic Year: <<Academic Year>>)

|   |                        |                     |                         |
|---|------------------------|---------------------|-------------------------|
| <b>Project Title :</b>  |                        |                     |                         |
| <b>Project Group No. :</b>  |                        | <b>Guide Name :</b> |                         |
| <b>GROUP MEMBERS:</b>   |                        |                     |                         |
| <b>Roll No. /<br/>Seat No.</b>  | <b>Name of Student</b> | <b>Project Area</b> | <b>Project Platform</b> |
|   |                        |                     |                         |
|   |                        |                     |                         |
|   |                        |                     |                         |
|   |                        |                     |                         |
|   |                        |                     |                         |
| <p><b>(Please Note : Remove the following guidelines and copy your Abstract)</b></p> <p><b>Abstract</b></p> <p><b>Abstract Content</b></p> <p>An abstract is an outline/brief summary of your whole project. It should include key points of introduction, methods, results and conclusions. It highlights major points of your project and answers why this work is important, what is your motivation. Most informative abstracts have following key parts.</p> <ol style="list-style-type: none"> <li>a. Background</li> <li>b. Aim or Purpose of Project</li> <li>c. Method Used</li> <li>d. Findings / Results</li> <li>e. Conclusion</li> </ol> <p><b>Do not include any charts, tables, figures, or spreadsheets in the abstract body.</b></p> <p><b>Guidelines for Abstract</b></p> <ul style="list-style-type: none"> <li>• In Microsoft Word format</li> <li>• In Calibri font, size 11</li> <li>• No more than 300 words approximately in length</li> <li>• Single-spaced and a single paragraph</li> </ul> <p><b>Abstract File Name : college code <span style="background-color: yellow;">space</span> Group id</b><br/> <b>e.g. 23 A1</b></p> |                        |                     |                         |

**<<College Name>>**  
**Department of Information Technology**  
**(Academic Year : <<Academic Year>>)**

**Semester - I**  
**Weekly Planning Sheet**

**Academic Year:**

| Week No. | Activity Planned | Activity Completed Status | Student Signature | Guide Signature |
|----------|------------------|---------------------------|-------------------|-----------------|
| Week 1   |                  |                           |                   |                 |
| Week 2   |                  |                           |                   |                 |
| Week 3   |                  |                           |                   |                 |
| Week 4   |                  |                           |                   |                 |
| Week 5   |                  |                           |                   |                 |
| Week 6   |                  |                           |                   |                 |
| Week 7   |                  |                           |                   |                 |
| Week 8   |                  |                           |                   |                 |
| Week 9   |                  |                           |                   |                 |
| Week 10  |                  |                           |                   |                 |
| Week 11  |                  |                           |                   |                 |
| Week 12  |                  |                           |                   |                 |

Project Coordinator

Internal Guide

<<College Name>>  
Department of Information Technology

**PROJECT REVIEW – I**  
(Academic Year: <<Academic Year>>)

| Group Id :      |          |              |                 | Date :                            |  |
|-----------------|----------|--------------|-----------------|-----------------------------------|--|
| Project Title : |          |              |                 |                                   |  |
| Sr. No.         | Roll No. | Student Name | Contact Details | Internal / External Guide Details |  |
| 1               |          |              |                 | Guide Name :                      |  |
| 2               |          |              |                 | Mentor Name, email & Mobile No. : |  |
| 3               |          |              |                 |                                   |  |
| 4               |          |              |                 |                                   |  |

**REVIEW – I CHECKLIST : FINALIZATION OF SCOPE**

**25 Marks**

| PROJECT STATEMENT   |                  |
|---|------------------|
| 1. Is the statement short and concise (10-20 words maximum)?  | Y / N / NA / NC* |
| 2. Does the statement gives clear indication about what your project will accomplish?   | Y / N / NA / NC* |
| 3. Can a person who is not familiar with the project understand scope of the project by reading the Project Problem Statement?        | Y / N / NA / NC* |
| REQUIREMENT: SCOPE AND OBJECTIVES   |                  |
| Does the Scope and Objectives establish the "context" for the proposed project by referencing to the following elements:              |                  |
| a. Are all aspects of the requirements document (i.e., Functional Spec.) addressed in the design?                                     | Y / N / NA / NC* |
| b. Is the architecture / block diagram well defined and understood?   | Y / N / NA / NC* |
| c. The project's objective of study (what product, process, resource etc.) is being addressed?  | Y / N / NA / NC* |
| d. The project's purpose: is the purpose of project addressed properly (why it's being pursued: to evaluate, reduce, increase, etc.)? | Y / N / NA / NC* |
| e. The project's viewpoint: Is the project's viewpoint is understood? (Who is the project's end user)?                                | Y / N / NA / NC* |
| f. Is the project goal statement is in alignment with the sponsoring organization's business goals and mission?                       | Y / N / NA / NC* |
| ANALYSIS  |                  |
| 1. Is information domain analysis complete, consistent and accurate?  | Y / N / NA / NC* |
| 2. Is problem statement categorized in identified area and targeted towards specific area therein?                                    | Y / N / NA / NC* |

|   |                  |
|---|------------------|
| 3. Are external and internal interfaces properly defined?                                     | Y / N / NA / NC* |
| 4. Does the Use Case Model properly reflects the actors and their roles and responsibilities? | Y / N / NA / NC* |
| 5. Are all requirements traceable to system level?  | Y / N / NA / NC* |
| 6. Is similar type of methodology / model is used for existing work?                          | Y / N / NA / NC* |
| 7. Are requirements consistent with schedule, resources and budget?                           | Y / N / NA / NC* |



&lt;&lt;College Name&gt;&gt;

Department of Information Technology

**PROJECT REVIEW – I****(Academic Year: <<Academic Year>>)****STUDENT PERFORMANCE EVALUATION**

| Students' Contribution and Performance |               |   |   |   |
|--|---------------|---|---|---|
| Particulars                            | Marks(25M)    |   |   |   |
|  | Group Members |   |   |   |
|  | 1             | 2 | 3 | 4 |
| 1. Background and Topic (4 M)          |               |   |   |   |
| 2. Project Scope and Objectives (4M)   |               |   |   |   |
| 3. Literature Survey (5 M)             |               |   |   |   |
| 4. Project Planning (4 M)              |               |   |   |   |
| 5. Presentation Skills (4 M)           |               |   |   |   |
| 6. Question and Answer (4 M)           |               |   |   |   |
| <b>Total(25M)</b>                      |               |   |   |   |
| <b>Comments (if any)</b>               |               |   |   |   |

# To be filled by internal guide &amp; reviewer(s) only.

\* Whether the presentation / evaluation is as per the schedule. : YES / NO (If NO mention the reasons for the same.)

**Review – I: Deliverables**

- Problem Statement / Title
- Purpose, Scope, Objectives
- Abstract (System Overview)
- Introduction (Architecture and High-level Design)
- Literature Survey
- References
- Project Plan 1.0

Name &amp; Signature of evaluation committee -

Name of Reviewer 1

Name of Reviewer 2

Name of Internal Guide

&lt;&lt;College Name&gt;&gt;

Department of Information Technology

**PROJECT REVIEW – II**

(Academic Year: &lt;&lt;Academic Year&gt;&gt;)

|                 |          |              |                 |                                   |
|-----------------|----------|--------------|-----------------|-----------------------------------|
| Group Id :      |          |              |                 | Date :                            |
| Project Title : |          |              |                 |                                   |
| Sr. No.         | Roll No. | Student Name | Contact Details | Internal / External Guide Details |
| 1               |          |              |                 | Guide Name :                      |
| 2               |          |              |                 | Mentor Name, email & Mobile No. : |
| 3               |          |              |                 |                                   |
| 4               |          |              |                 |                                   |

**REVIEW – II CHECKLIST : DESIGN****25 Marks**

| DESIGN  |                  |
|---|------------------|
| 1. Are requirements reflected in the system architecture?   | Y / N / NA / NC* |
| 2. Does the design support both project (product) and project goals?  | Y / N / NA / NC* |
| 3. Does the design address all the issues from the requirements?  | Y / N / NA / NC* |
| 4. Is effective modularity achieved and modules are functionally independent?                                     | Y / N / NA / NC* |
| 5. Are structural diagrams (Class, Object, etc.) well defined and understood?                                     | Y / N / NA / NC* |
| 6. Are all class associations clearly defined and understood? (Is it clear which classes provide which services)? | Y / N / NA / NC* |
| 7. Are the classes in the class diagram clear? (What they represent in the architecture design document?)         | Y / N / NA / NC* |
| 8. Is inheritance appropriately used?   | Y / N / NA / NC* |
| 9. Are the multiplicities in the use case diagram depicted in the class diagram?                                  | Y / N / NA / NC* |
| 10. Are behavioral diagrams (use case, sequence, activity, etc.) well defined and understood?                     | Y / N / NA / NC* |
| 11. Is aggregation/containment (if used) clearly defined and understood?  | Y / N / NA / NC* |
| 12. Does each case have clearly defined actors and input/output?  | Y / N / NA / NC* |
| 13. Is all concurrent processing (if used) clearly understood and reflected in the sequence diagrams?             | Y / N / NA / NC* |
| 14. Are all objects used in sequence diagram?   | Y / N / NA / NC* |
| 15. Does the sequence diagram match class diagram?  | Y / N / NA / NC* |
| 16. Are the symbols used in all diagrams correspond to UML standards?   | Y / N / NA / NC* |

&lt;&lt;College Name&gt;&gt;

Department of Information Technology

**PROJECT REVIEW – II****(Academic Year: <<Academic Year>>)****STUDENT PERFORMANCE EVALUATION**

| Students' Contribution and Performance                |               |     |     |     |
|---|---------------|-----|-----|-----|
| Particulars   | Marks(25M)    |     |     |     |
|   | Group Members |     |     |     |
|   | 1             | 2   | 3   | 4   |
| 1. System Architecture & Literature Survey (Review-I) | Y/N           | Y/N | Y/N | Y/N |
| 2. Project Design (5 M)                               |               |     |     |     |
| 3. Methodology /Algorithms and Project Features (5 M) |               |     |     |     |
| 4. Project Planning (2 M)                             |               |     |     |     |
| 5. Basic details of Implementation (5 M)              |               |     |     |     |
| 6. Presentation Skills ( 4 M)                         |               |     |     |     |
| 7. Question and Answer (4 M)                          |               |     |     |     |
| 8. Summarization of ultimate findings of the Project  | Y/N           | Y/N | Y/N | Y/N |
| <b>Total(25M)</b>                                     |               |     |     |     |
| <b>Comments (if any)</b>                              |               |     |     |     |

# To be filled by internal guide &amp; reviewer(s) only.

\* Whether the presentation / evaluation is as per the schedule. : YES / NO (If NO mention the reasons for the same.)

**Review – II: Deliverables**

- Problem Statement / Title
- Abstract
- Introduction
- Literature Survey (comparison with existing system)
- Methodology
- Design / algorithms / techniques used
- Modules Split-up
- Proposed System
- Software Tools / Technologies to be used
- Proposed Outcomes
- Partial Report (Semester – I)
- Project Plan 2.0

Name &amp; Signature of evaluation committee -

Name of Reviewer 1

Name of Reviewer 2

Name of Internal Guide

# SEMESTER - II

**<<College Name>>**  
**Department of Information Technology**  
**(Academic Year : <<Academic Year>>)**

**Semester - II**  
**Weekly Planning Sheet**

**Academic Year:**

| Week No. | Activity Planned | Activity Completed Status | Student Signature | Guide Signature |
|----------|------------------|---------------------------|-------------------|-----------------|
| Week 1   |                  |                           |                   |                 |
| Week 2   |                  |                           |                   |                 |
| Week 3   |                  |                           |                   |                 |
| Week 4   |                  |                           |                   |                 |
| Week 5   |                  |                           |                   |                 |
| Week 6   |                  |                           |                   |                 |
| Week 7   |                  |                           |                   |                 |
| Week 8   |                  |                           |                   |                 |
| Week 9   |                  |                           |                   |                 |
| Week 10  |                  |                           |                   |                 |
| Week 11  |                  |                           |                   |                 |
| Week 12  |                  |                           |                   |                 |

Project Coordinator

Internal Guide

&lt;&lt;College Name&gt;&gt;

Department of Information Technology

**PROJECT REVIEW – III**  
**(Academic Year : <<Academic Year>>)**

|                 |          |              |                 |                                   |  |
|-----------------|----------|--------------|-----------------|-----------------------------------|--|
| Group Id :      |          |              |                 | Date :                            |  |
| Project Title : |          |              |                 |                                   |  |
| Sr. No.         | Roll No. | Student Name | Contact Details | Internal / External Guide Details |  |
| 1               |          |              |                 | Guide Name :                      |  |
| 2               |          |              |                 | Mentor Name, email & Mobile No. : |  |
| 3               |          |              |                 |                                   |  |
| 4               |          |              |                 |                                   |  |

**REVIEW – III : IMPLEMENTATION****25 Marks**

| IMPLEMENTATION (SOURCE CODE REVIEW CHECKLIST)                                    |                  |
|--|------------------|
| <b>a. Structure</b>  |                  |
| 1. Does the code completely and correctly implement the design?                  | Y / N / NA / NC* |
| 2. Does the code comply with the Coding Standards?                               | Y / N / NA / NC* |
| 3. Is the code well-structured, consistent in style, and consistently formatted? | Y / N / NA / NC* |
| 4. Does the implementation match the design?                                     | Y / N / NA / NC* |
| 5. Are all functions in the design coded?  | Y / N / NA / NC* |
| <b>b. Documentation</b>  |                  |
| 1. Is the code clearly and adequately documented?                                | Y / N / NA / NC* |
| 2. Are all comments consistent with the code?                                    | Y / N / NA / NC* |

&lt;&lt;College Name&gt;&gt;

Department of Information Technology

**PROJECT REVIEW – III**

(Academic Year : &lt;&lt;Academic Year&gt;&gt;)

**STUDENT PERFORMANCE EVALUATION**

| Students' Contribution and Performance                                      |               |     |     |     |
|---|---------------|-----|-----|-----|
| Particulars   | Marks(25M)    |     |     |     |
|   | Group Members |     |     |     |
|   | 1             | 2   | 3   | 4   |
| 1. Architecture / System Design -(if any modification)                      | Y/N           | Y/N | Y/N | Y/N |
| 2. 50 % Implementation (10 M)   |               |     |     |     |
| 3. Partial results obtained ( 7 M)  |               |     |     |     |
| 4. Presentation skills (4 M)  |               |     |     |     |
| 5. Question and Answer ( 4 M)   |               |     |     |     |
| 6. Summarize the methodologies / Algorithms implemented / to be implemented | Y/N           | Y/N | Y/N | Y/N |
| <b>Total(25M)</b>   |               |     |     |     |
| <b>Comments (if any)</b>  |               |     |     |     |

# To be filled by internal guide &amp; reviewer(s) only.

\* Whether the presentation / evaluation is as per the schedule. : YES / NO (If NO mention the reasons for the same.)

**Review – III: Deliverables**

- Detailed Design (if any deviation)
- 50% of code implementation
- Some Experimental Results
- Project Plan 3.0

Name &amp; Signature of evaluation committee -

Name of Reviewer 1

Name of Reviewer 2

Name of Internal Guide

&lt;&lt;College Name&gt;&gt;

Department of Information Technology

**PROJECT REVIEW – IV**

(Academic Year : &lt;&lt;Academic Year&gt;&gt;)

|                 |          |              |                 |                                   |
|-----------------|----------|--------------|-----------------|-----------------------------------|
| Group Id :      |          |              |                 | Date :                            |
| Project Title : |          |              |                 |                                   |
| Sr. No.         | Roll No. | Student Name | Contact Details | Internal / External Guide Details |
| 1               |          |              |                 | Guide Name :                      |
| 2               |          |              |                 | Mentor Name, email & Mobile No. : |
| 3               |          |              |                 |                                   |
| 4               |          |              |                 |                                   |

**REVIEW – IV : (25 Marks)**

| IMPLEMENTATION AND TESTING  |                  |
|---|------------------|
| 1. Is every feature tested?   | Y / N / NA / NC* |
| 2. Are all functions, user screens and navigation tested? (e.g. module, object, integration, usability, system) | Y / N / NA / NC* |
| 3. Are test cases designed? (manual and automated)  | Y / N / NA / NC* |
| 4. Is testing tool used?  | Y / N / NA / NC* |
| 5. Is result analysis done properly and appropriate conclusion drawn?   | Y / N / NA / NC* |
| 6. Implementation status ( code completion in percentage)   |                  |
| 7. Final thesis status( in percentage)  |                  |

**FILL IN BRIEF**

Final results are known or not? :

Quality of Presentation :

List the chapter numbers of final report :

Project Completion Date :

Final Report Submission Date :

**General**

Is the LOG BOOK of project up-to-date and signed?

- NC – Not Clear
- NA – Not Applicable



&lt;&lt;College Name&gt;&gt;

Department of Information Technology

**PROJECT REVIEW – IV**

(Academic Year : &lt;&lt;Academic Year&gt;&gt;)

**STUDENT PERFORMANCE EVALUATION**

| Students' Contribution and Performance                |               |   |   |   |
|---|---------------|---|---|---|
| Particulars   | Marks(25M)    |   |   |   |
|   | Group Members |   |   |   |
|   | 1             | 2 | 3 | 4 |
| 1. Implementation (100%) (5 M)                        |               |   |   |   |
| 2. Testing, Results and Performance Evaluation ( 5 M) |               |   |   |   |
| 3. Final Project Report ( 5 M)                        |               |   |   |   |
| 4. Publications ( 2 M)                                |               |   |   |   |
| 5. Presentation skills ( 4 M)                         |               |   |   |   |
| 6. Question and Answer (4 M)                          |               |   |   |   |
| <b>Total(25M)</b>                                     |               |   |   |   |
| <b>Comments (if any)</b>                              |               |   |   |   |

# To be filled by internal guide &amp; reviewer(s) only.

\* Whether the presentation/evaluation is as per the schedule. : YES / NO (If NO mention the reasons for the same.)

**Review – IV: Deliverables**

- Detailed Design
- 100% of code implementation
- Experimental Results
- Performance Evaluation
- Test Cases
- Result Analysis and Conclusion
- Final Thesis
- Project Plan 4.0

Name &amp; Signature of evaluation committee -

Name of Reviewer 1

Name of Reviewer 2

Name of Internal Guide

&lt;&lt;College Name&gt;&gt;

Department of Information Technology

**PROJECT REVIEW –I to IV**  
(Academic Year : <<Academic Year>>)

**Summary of Project Work Evaluation Sheet**

| Sr. No. | Roll No. / Exam. No. | Name of the Student | I | II | III | IV | Total | Student Signature |
|---------|----------------------|---------------------|---|----|-----|----|-------|-------------------|
| 1       |                      |                     |   |    |     |    |       |                   |
| 2       |                      |                     |   |    |     |    |       |                   |
| 3       |                      |                     |   |    |     |    |       |                   |
| 4       |                      |                     |   |    |     |    |       |                   |

Overall Remarks or Comments (if any)

Name of Reviewer 1

Name of Reviewer 2

Name of Internal Guide

&lt;&lt;College Name&gt;&gt;

**Department of Information Technology****Participation in Project Competition/Event****(Academic Year : <<Academic Year>>)**

| Sr. No. | Name & Place of Project Competition / Exhibition | Date | Certificate / Prizes won (if any) |
|---------|--|------|-----------------------------------|
|         |  |      |                                   |
|         |  |      |                                   |
|         |  |      |                                   |
|         |  |      |                                   |

**Paper Publication / Presentation**

| Sr. No. | Name of the organizing society | Date | Certificate / Prizes Win (if any) |
|---------|--------------------------------|------|-----------------------------------|
|         |                                |      |                                   |
|         |                                |      |                                   |
|         |                                |      |                                   |
|         |                                |      |                                   |

\* Photocopy of the certificate must be attached to this booklet.

Project Coordinator

Internal Guide

**Savitribai Phule Pune University**  
**Faculty of Information Technology**

**Examination Evaluation Guidelines**

Along with Internal Examiner, the External Examiner should see their Partial or Final project reports, project log book and the presentation of each group along with live project demonstration (applicable in second semester).

There is a possibility that the marks obtained in B.E. Projects by various groups across the university may not be uniform because of the involvement of many examiners. It is expected that the examiners should evaluate the students rigorously. Both the examiners are supposed to evaluate each student / group based on some or all of the following points. Also the evaluation of the examiners must be fair enough so that the student gets appropriate credit/ marks for his/her efforts. Marks breakup is enclosed in the attached excel sheet

The following are the guidelines for the presentation and should be shared with the students.

1. Purpose or Significance or Motivation of Study / topic identified
2. Objectives of Problem Statement
3. Technical relevance and originality of problem
4. Literature reviewed followed by sufficient requirements analysis
5. Design and coding effort along with best practices followed
6. Analysis, interpretation, implementation and validity of results
7. Extent of technical knowledge and coding skill gained
8. Use of project management techniques and maintaining project log Book.
9. Use of modern CASE tools and techniques in development (if required for the problem)
10. Team-work and collaboration
11. Use of professional ethics and social relevance
12. Presentation Skills
13. Answers to questions - analysis, depth of understanding of problem/ conclusions/ inference
14. Project Report / Thesis Contents Quality

**NOTE:**

1. The project groups obtaining more than 90% of marks in the project exam may be moderated by the committee appointed by the University of Pune.
2. The evaluation sheet enclosed should be duly filled according to project group and sent along with the chairman copy of the mark list.

**SavitribaiPhule Pune University**  
**Faculty of Information Technology**

**SEMESTER - I**

**External Examination Evaluation Sheet**

**Programme of Term-work Examination BEIT- Nov. / Dec. (<<Academic Year>>)**

| Sr. No.  | Exam Seat Number | Originality of Problem Statement Attainment of Objectives | Analysis & Design | Presentation Skills | Answers to questions - analysis, depth of understanding the problem / conclusions / inference | Content Quality of Partial Project Report | Total (out of 50) |
|----------|------------------|---|-------------------|---------------------|---|---|-------------------|
| Marks -> |                  | 5   | 20                | 5                   | 10  | 10  | TW                |
| 1        |                  |   |                   |                     |   |   |                   |
| 2        |                  |   |                   |                     |   |   |                   |
| 3        |                  |   |                   |                     |   |   |                   |
| 4        |                  |   |                   |                     |   |   |                   |
| 5        |                  |   |                   |                     |   |   |                   |
| 6        |                  |   |                   |                     |   |   |                   |
| 7        |                  |   |                   |                     |   |   |                   |
| 8        |                  |   |                   |                     |   |   |                   |
| 9        |                  |   |                   |                     |   |   |                   |
| 10       |                  |   |                   |                     |   |   |                   |
| 11       |                  |   |                   |                     |   |   |                   |
| 12       |                  |   |                   |                     |   |   |                   |
| 13       |                  |   |                   |                     |   |   |                   |
| 14       |                  |   |                   |                     |   |   |                   |
| 15       |                  |   |                   |                     |   |   |                   |
| 16       |                  |   |                   |                     |   |   |                   |
| 17       |                  |   |                   |                     |   |   |                   |
| 18       |                  |   |                   |                     |   |   |                   |
| 19       |                  |   |                   |                     |   |   |                   |
| 20       |                  |   |                   |                     |   |   |                   |

Signature  
Internal Examiner

Signature  
External Examiner

**Savitribai Phule Pune University**  
**Faculty of Information Technology**  
**Semester - II**

**External Examination Evaluation Sheet**

**Programme of Oral / Term-work Examination BEIT - May / June (<Academic Year>)**

| Sr. No.  | Exam Seat Number | Originality of Problem Statement Attainment of Objectives | Analysis & Design | Implementation & Coding Standards Technology / Software / Tools Used | Presentation Skills | Answers to questions - analysis, depth of understanding the problem / conclusions / inference | Content Quality of Project Report | Total (out of 50) |
|----------|------------------|---|-------------------|--|---------------------|---|-----------------------------------|-------------------|
| Marks -> |                  | 5   | 10                | 10   | 5                   | 10  | 10                                | TW                |
| 1        |                  |   |                   |  |                     |   |                                   |                   |
| 2        |                  |   |                   |  |                     |   |                                   |                   |
| 3        |                  |   |                   |  |                     |   |                                   |                   |
| 4        |                  |   |                   |  |                     |   |                                   |                   |
| 5        |                  |   |                   |  |                     |   |                                   |                   |
| 6        |                  |   |                   |  |                     |   |                                   |                   |
| 7        |                  |   |                   |  |                     |   |                                   |                   |
| 8        |                  |   |                   |  |                     |   |                                   |                   |
| 9        |                  |   |                   |  |                     |   |                                   |                   |
| 10       |                  |   |                   |  |                     |   |                                   |                   |
| 11       |                  |   |                   |  |                     |   |                                   |                   |
| 12       |                  |   |                   |  |                     |   |                                   |                   |
| 13       |                  |   |                   |  |                     |   |                                   |                   |
| 14       |                  |   |                   |  |                     |   |                                   |                   |
| 15       |                  |   |                   |  |                     |   |                                   |                   |
| 16       |                  |   |                   |  |                     |   |                                   |                   |
| 17       |                  |   |                   |  |                     |   |                                   |                   |
| 18       |                  |   |                   |  |                     |   |                                   |                   |
| 19       |                  |   |                   |  |                     |   |                                   |                   |
| 20       |                  |   |                   |  |                     |   |                                   |                   |

Signature  
Internal Examiner

Signature  
External Examiner

**PROJECT REPORT FORMAT****Instructions:**

It is important that the procedures listed below be carefully followed.

1. Prepare 2 + No. of project members' copies of your manuscript (1-CD for college).
2. Limit your project report to preferably 60-70 manuscript pages.
3. The footer should be included as "College Name - INFORMATION TECHNOLOGY – <<Academic Year>>" while the header should contain "NAME OF PROJECT". Both header and footer should be TIMES NEW ROMAN 10pt and centrally aligned.
4. Print the manuscript using letter quality computer printing. The main part of manuscript should be TIMES ROMAN 12pt and justified. Use 1.5 line spacing and justify aligned
5. Use paper size 8.5" X 11" or A-4(210X197mm). Please follow following margins

| Margin Location | Paper A4 (210X197mm) |
|-----------------|----------------------|
| Top             | 25.4 mm              |
| Left            | 37 mm                |
| Bottom          | 32 mm                |
| Right           | 25.4 mm              |

6. All paragraphs will be 1.5 line spaced and a double space between each paragraph. Each paragraph will begin with a five-space indentation.
7. Chapter titles should be bold with 14pt typed in all capital letters and should be aligned at the center of the page. Section heading should be aligned at the left with 12pt and bold and capitalized. Section subheading should be aligned at the left with title case (the first letter of each word is to be capitalized). Leave two spaces between section headings and 1 space between two section subheadings.
8. Illustrations (Charts, drawings photographs, figures) are to be in the text. Use only illustrations really pertinent to the text. Illustrations must be sharp, clear, black and white. Illustrations downloaded from internet are not acceptable.
  - a. Illustrations should not be more than two per page. One could be ideal
  - b. Figure No. and title at bottom with 12pt.
  - c. Legends below the title in 10pt.
  - d. Proper margin in all sides.
  - e. Illustrations as far as possible should not be Xeroxed (photo copy)
9. Photographs if any should be of glossy prints.
10. Please use SI system for units. If student would like to add the equivalent in inch-pound (IP) units, they must be stated in parentheses after the SI units. In case the final result comes out in any other units (say due to empirical formula etc.) convert the unit to SI unit.
11. Please number the pages on the front side, centrally below the footer.
12. References should be either in order as they appear in the paper or in alphabetical order by last name of first author.
13. Symbols and notations if any should be included in nomenclature section only.
14. Following will be the order of the report.
  - a. Cover page and front page as per specimen on separate sheet.
  - b. Certificate from institute as per specimen on separate sheet.
  - c. Certificate from industry on separate sheet (as case may be).
  - d. Acknowledgement.
  - e. List of figures.
  - f. List of Tables

- g. Nomenclature
  - h. Contents
  - i. Abstract (A brief abstract of the report not more than 150 words. The heading of abstract i.e. word "Abstract" should be bold, times roman 12 pt and should be typed at the center. The contents of abstract should be typed on new line without space between heading and contents.
  - j. Chapter1 : Introduction
  - k. Other chapters starting on new page.
  - l. References (In IEEE format)
  - m. Appendices if any. Appendix should contain routine calculation, standard data, derivation and relevant cyber laws.
15. All chapters, section heading and subheadings should be numbered. For chapters use numbers 1, 2..... And for subheadings 1.1, 1.2 etc. and section subheadings 2.1.1, 2.2.2, 2.3.1 etc.
16. References should be given in the body of the text and well spread. No verbatim copy or excessive text from only one or two reference should be used. If figures and tables are taken from any reference then indicate its source. Please follow following procedure for references.

### Reference books

Collier. G. j. and Thome J. R., Convective boiling and condensation, 3<sup>rd</sup>ed, Oxford University Press, UK. 1996, pp. 110-112

### Papers from Journal or transactions

JUNG D. S. and Raderamcher R. "Transport properties and surface tension of pure and mixed refrigerants", Ashare Trans, 1991, 97(1), p. 90-98

### Papers from conference proceedings

Colbourn D. R and Ritter T. J. "Quantitative assessment of flammable refrigerants in room air conditioners", proceedings of the sixteenth International compressor Engineering Conference and Ninth International Refrigeration and Air conditioning Conference, Putdu University, West Lafayette Indiana, USA, 2002

### Reports Handbooks etc.

United Nations Environmental Programme, Report of the refrigeration, Air Conditioning and heat pumps, Technical option Committee, 2002 Assessment, 2002

ASHRAE handbook : Refrigeration, 1994 (chapter44)

### Patent

Patent no. Country (In parenthesis), date of application, title, year. If taken from "Abstract" give cross reference as CF, CA.....

### Internet

[WWW.\(Site\)](#)



**SPECIMEN PROJECT REPORT FORMAT**

*A) Cover and front page should be CENTER ALIGNED*

*2-Blank spaces*

**A PROJECT REPORT ON** *(12/bold/upper case)*  
*(Two blank spaces)*

**<<PROJECT TITLE>>** *(16/bold/upper case)*  
*(Two blank spaces)*

SUBMITTED TO THE SAVITRIBAI PHULE PUNE UNIVERSITY, PUNE *(12/upper case)*  
IN THE PARTIAL FULFILLMENT FOR THE AWARD OF THE DEGREE *(12/upper case)*  
*(One blank space)*

**OF** *(12/upper case)*  
*(Two blank spaces)*

**BACHELOR OF ENGINEERING**  
**IN**  
**INFORMATION TECHNOLOGY** *(16/bold/upper case)*  
*(Two blank spaces)*

**BY** *(14/bold/upper case)*  
*(Two blank spaces)*

<<Name of Student 1 >>                      <<Examination Seat No. : 1>> *(14/bold/upper case)*  
<<Name of Student 2 >>                      <<Examination Seat No. : 2 >>

*(Two blank space)*

**UNDER THE GUIDANCE OF** *(14/bold/upper case)*

**<<Guide Name>>** *(14/bold/upper case)*

**<<College Logo>>**

**DEPARTMENT OF INFORMATION TECHNOLOGY**

**<<COLLEGE NAME>>** *(12/bold/upper case)*  
**<<Address>>** *(12/bold/upper case)*

**<<Academic Year>>** *(12/bold/upper case)*

**B) CERTIFICATE***(six blank space)***CERTIFICATE** *(16/bold/upper case)**(Three blank space)*This is to certify that the project report entitled *(12 /sentence case)**(Two blank space)*

&lt;&lt;PROJECT TITLE&gt;&gt;

*(12/bold/upper case)**(Two blank space)***Submitted by** *(one line blank space)*

&lt;&lt;Name of Student 1 &gt;&gt;

<<Examination Seat No. : 1>> *(12/title case)*

&lt;&lt;Name of Student 2 &gt;&gt;

&lt;&lt;Examination Seat No. : 2 &gt;&gt;

*(Three blank space)*

is a bonafide work carried out by them under the supervision of Prof. \_\_\_\_\_ and it is approved for the partial fulfillment of the requirement of Savitribai Phule Pune University for the award of the Degree of Bachelor of Engineering (Information Technology)  
*(12/ sentence case)*

*(Two blank space)*

This project report has not been earlier submitted to any other Institute or University for the award of any degree or diploma. *(12/ sentence case)*

&lt;&lt;Name &gt;&gt;

Internal Guide

Department of Information Technology

&lt;&lt;Name &gt;&gt;

Head of Department

Department of Information Technology

&lt;&lt;Name &gt;&gt;

External Examiner

Date :

&lt;&lt;Name &gt;&gt;

Principal

&lt;&lt;College Name&gt;&gt;

Place:

Date:

**C) CONTENTS***(Four blank space)***CONTENTS***(14/bold/upper case)*

|   |     |                             |
|---|-----|-----------------------------|
| CERTIFICATE   | I   | <i>(12/bold/upper case)</i> |
| CERTIFICATE FROM INDUSTRY <i>(12/bold/upper case)</i> | II  |                             |
| ACKNOWLEDGEMENT                                       | III | <i>(12/bold/upper case)</i> |
| LIST OF FIGURES                                       | IV  | <i>(12/bold/upper case)</i> |
| LIST OF TABLES  | V   | <i>(12/bold/upper case)</i> |
| NOMENCLATURE  | VI  | <i>(12/bold/upper case)</i> |

**CHAPTER****TITLE****PAGE NO.***(14/bold/upper case)*

|           |                                    |                             |
|-----------|------------------------------------|-----------------------------|
| <b>1.</b> | <b>INTRODUCTION</b>                | <i>(12/bold/upper case)</i> |
| 1.1       | BACKGROUND                         |                             |
| 1.2       | RELEVANCE                          |                             |
| 1.3       | PROJECT UNDERTAKEN                 |                             |
| 1.4       | ORGANIZATION OF PROJECT REPORT     |                             |
| <b>2.</b> | <b>BACKGROUND</b>                  | <i>(12/bold/upper case)</i> |
| 2.1       | -----                              |                             |
| 2.2       | -----                              |                             |
| 2.2.1     | -----                              |                             |
| <b>3.</b> | <b>SPECIFICATION</b>               | <i>(12/bold/upper case)</i> |
| 3.1       | -----                              |                             |
| 3.1.1     | -----                              |                             |
| <b>4.</b> | <b>DESIGN</b>                      | <i>(12/bold/upper case)</i> |
| 4.1       | -----                              |                             |
| 4.1.1     | -----                              |                             |
| <b>5.</b> | <b>IMPLEMENTATION</b>              | <i>(12/bold/upper case)</i> |
| 5.1       | -----                              |                             |
| 5.1.1     | -----                              |                             |
| <b>6.</b> | <b>RESULTS AND EVALUATION</b>      | <i>(12/bold/upper case)</i> |
| 6.1       | -----                              |                             |
| 6.1.1     | -----                              |                             |
| <b>7.</b> | <b>CONCLUSIONS AND FUTURE WORK</b> | <i>(12/bold/upper case)</i> |
|           | <b>REFERENCES</b>                  | <i>(12/bold/upper case)</i> |
|           | Appendix A                         | <i>(12/bold/upper case)</i> |
|           | Appendix B                         | <i>(12/bold/upper case)</i> |

## Partial / Final Report Contents

### Abstract (Report Abstract)

An abstract is a brief summary or condensed version of the entire project, usually between 100 and 250 words long and written in the past tense. It includes the key points of the introduction, methods, results and conclusions of your project. The abstract takes the form of a paragraph, usually with 5-10 sentences. It should not include citations; use the background and conclusions to help to frame the context of your topic. Include keywords (the words that will help readers to search your report from repository or online) after abstract.

### Introduction

Introduction should help to understand three key questions to the reader: Why is this important problem? What has been done before? How does your topic (problem) bring significant new understanding to the respective field? It should be written in present tense and should include the following points:

- i. Outline the problem you are working on, why is it interesting, important and what are the challenges?
- ii. List your aims and goals. An aim is something you intend to achieve (e.g., learn a new programming language and apply it in solving the problem), while a goal is something specific you expect to deliver (e.g., a working application with a particular set of features)
- iii. Give an overview of how you have carried out the project (i.e. software development model)
- iv. A brief overview of the rest of the chapters in the report (a guide to the reader of the overall structure of the report).
- v. This chapter is relatively short (2-4 pages) and must give the reader very clear understanding of what the project is about and what your goals are

### Background and Literature review

This chapter should cover background information, related work, research done and tools or software used in the project.

- i. Provide necessary framework and background information to describe how your project relates to what is already known or available.
- ii. A survey of existing solutions, programs or applications similar to your project (if necessary), and how your project is different than existing one
- iii. A description of the project work carried out to learn about methodology used for investigation of the problem.
- iv. The form of the project work will vary widely depending on the kind of project. Outline and key sources of information you are using (papers, books, websites, etc.). State how each source is related to your work.
- v. Introduce the software, programming languages, library code, frame-works and other tools that you have used. Discuss choices and make clear which you made use of and why.

### Requirements and Analysis

- i. Give the detailed problem statement. This elaborates on what you may have included in the introduction chapter and represents the starting point from which requirements were derived.

**Problem Definition:** Define/formulate the problem clearly and concisely of your project work. Provide details of the overall problem and then divide the problem into module(s).

- ii. **Requirements Specification:** A structured list of requirements. The requirement specifications determine specific feature expectations, resolution of conflict or ambiguity in requirements as demanded by the various users or groups of users and documentation of all aspects of the project development process from start to finish. Here you should define the requirements of the system, independent of how these requirements will be accomplished and identify the operation and problems of the existing system.
- iii. Description of Use cases/documentation (list of use case titles, with the full use cases appearing in the appendix).
- iv. **Software and Hardware Requirements:** Define the details of all the software and hardware needed for the development and implementation of your project.

## Design

- i. Start with the architecture of your project and describe all components that makes up the system
- ii. You can use necessary DFDs and UML diagrams with proper explanation of your project design
- iii. The structure and contents of this chapter will vary according to the nature of your project, hence above mentioned list of requirements is only representative.

## Implementation

This chapter is about the realization of the concepts and ideas developed earlier. You can describe the methodology (problem formulation and processes used to solve the problem) you have identified for the development of your system/application (Literature review will help you to identify/choose methodology). It can also describe any problems that may have arisen during implementation and how you dealt with them. It should include the details regarding all modules of the project and description of each module. It may be better to use pseudo-code rather than actual code, when describing an algorithm. Describe how a particular algorithm is implemented or how an interesting programming problem was solved.

## Results and Evaluation

In this chapter, you should describe to what extent you achieved your goals and how the system works as intended (or not, as the case maybe). Include comprehensible summaries of the results of all critical tests that were carried out.

- i. Describe experimental setup.
- ii. Describe your testing strategy (unit, functional, acceptance testing and how they are carried out). How were test cases selected?
- iii. Examples of specific tests and how they were carried out (e.g., using mock objects to break dependencies). Focus on the interesting test cases.
- iv. A summary of the test results and what coverage was achieved. The detailed test report(s) should appear in the appendix.

## Conclusion

Demonstrate that you solved the problem or made significant improvement in the existing system/application. You can use illustrations such as tables, figures, graphs etc to support the conclusions.

- i. Summarize what your project has achieved. Address each objective decided in the introduction.
- ii. A critical evaluation of the results of the project (e.g., how well were the objectives met, is the application fit for purpose, has good design and implementation practice been followed, was the right implementation technology chosen and so on).
- iii. Results should be clear and concise.

- iv. State why your solution offers a new/improved solution
- v. Acknowledge any limitations

## References

- i. List of references.
- ii. Bibliography: This lists all the sources of information that you made use of during the project but are not referenced in the text. The items in the list must be relevant to your project, so don't just list everything you may have looked at or read.