

Savitribai Phule Pune University, Pune		
Second Year Information Technology (2019 Course)		
214458: Project Based Learning		
Teaching Scheme:	Credit Scheme:	Examination Scheme:
Practical (PR): 04hrs/week	02	TW : 50 Marks
Prerequisite Courses, if any:		
<p>Preamble: Project Based Learning (PBL) is an instructional approach that emphasizes critical-thinking, collaboration and personalized learning. In PBL, student groups engage in meaningful inquiry that is of personal interest to them. These projects are based on problems, which are real-life oriented, curriculum-based and often interdisciplinary. Students decide how to approach a problem and what activities or processes they will perform. They collect information from a variety of sources, analyze, synthesize and derive understanding from it. The real-world focus of PBL activities is central to the process because it motivates students and adds value to their work. Their learning is connected to something real and involves life skills such as collaboration and reflection. The faculty assigned to the group is referred as mentor. Technology enables students and Mentor in various phases of the PBL process. At the end of the PBL, students demonstrate their newly acquired knowledge and are evaluated by how much they have learned and how well they communicate it. Students also conduct self-evaluation to assess their own growth and learning. Throughout this process, the mentor's role is to guide and advise students, rather than to direct and manage student work.</p>		
<p>Companion Course: Online courses relevant to the project, along with expert lecture on Intellectual property rights, patents and software engineering.</p>		
<p>Course Objectives :</p> <ol style="list-style-type: none"> 1. To learn the various processes involved in project based learning. 2. To develop critical thinking and engineering problem solving skills amongst the students. 3. To explain the roles and responsibilities of IT engineers to the solution of engineering problems within the social, environmental and economic context. 4. To equip the students with knowledge and skills require to develop solutions for the problems coming from various Hackathon. 		
<p>Course Outcomes</p> <p>On completion of the course, student will be able to --</p> <p>CO1: Design solution to real life problems and analyze its concerns through shared cognition.</p> <p>CO2: Apply learning by doing approach in PBL to promote lifelong learning.</p> <p>CO3: Tackle technical challenges for solving real world problems with team efforts.</p> <p>CO4: Collaborate and engage in multi-disciplinary learning environments.</p>		

COURSE CONTENTS

Group Structure

Group structure should enable students to work in mentor–monitored groups. The students plan, manage and complete a task/project / activity which addresses the stated problem.

1. There should be a team of 3 to 6 students who will work cohesively.
2. A Mentor should be assigned to individual groups who will help them with learning and development process.

Selection of Project/Problem

1. The project scope/topic can be from any field/area, but selection related to IT technical aspect is desirous.
2. The project/problem done in first year engineering could be extended further, based on its potential and significance analysis.
3. Project/problem requiring solutions through conceptual model development and use of software tools should be preferred.
4. Different alternate approaches such as theoretical, practical, working model, demonstration or software analysis should be used in solving/implementing of project/problem.
5. The project/problem requiring multi-disciplinary approach to solve it, should be preferred.
6. Problem may require in depth study of specific practical, scientific or technical domain.
7. Hands-on activities, organizational and field visits, interacting with research institutes and expert consultation should be included in the approach to make students aware of latest technologies.

Assessment

The department should be committed to assess and evaluate both student performance and solution impact.

Progress of PBL will be monitored regularly on weekly basis. Weekly review of the work is necessary. During process of monitoring and continuous assessment and evaluation the individual and team performance is to be measured by mentor.

Students must maintain an institutional culture of authentic collaboration, self- motivation, peer-learning and personal responsiveness. The institution/department should support students in this regard through guidance/orientation programs and the provision of appropriate resources and services. Supervisor/mentor and students must actively participate in assessment and evaluation processes. Group may demonstrate their knowledge and skills by developing a public product and/or report and/or presentation.

1. Individual assessment for each student (Understanding individual capacity, role and involvement in the project).
2. Group assessment (roles defined, distribution of work, intra-team communication and togetherness).
3. Documentation and presentation.

Evaluation and Continuous Assessment

It is recommended that the all activities are to be recorded in PBL workbook, regular assessment of work to be done and proper documents are to be maintained at college end by both students as well as mentor.

The PBL workbook will reflect accountability, punctuality, technical writing ability and work flow of the task undertaken. Continuous Assessment Sheet (CAS) is to be maintained by all mentors/department.

Recommended parameters for assessment, evaluation and weightage:

1. Idea Inception (5%)
2. Outcomes of PBL/Problem Solving Skills/Solution provided/Final product(**40%**) (Individual assessment and team assessment)
3. Documentation (Gathering requirements, design & modeling, implementation/execution, use of technology and final report, other documents (**25 %**))
4. Potential for the patent(**10%**)
5. Demonstration (Presentation, User Interface, Usability etc.) (**10%**)
6. Contest Participation/ publication (**5%**)
7. Awareness /Consideration of Environment/ Social /Ethics/ Safety measures/Legal aspects (**5%**).

Design the rubrics based on the above parameters for evaluation of student performance

Faculty / Mentor is expected to perform following activities

Faculty/ Mentor is expected to perform following activities:

Revision of PBL concepts

Skill assessment of students

Formation of diversified and balanced groups

Share information about patent, copyright and publications to make students aware about it

Discussion of sample case studies

Design of the rubrics for evaluation of student performance

Discussion of the rubrics with students

Weekly Assessment of the deliverables such as Presentation, Report, Concept map, logbook

Scaffolding of the students

Summative and Formative assessment

Reference Books:

1. Project-Based Learning, Edutopia, March 14,2016.
2. What is PBL? Buck Institute for Education.
3. www.schoolology.com
4. www.wikipedia.org
5. www.howstuffworks.com

Savitribai Phule Pune University, Pune Third Year Information Technology (2019 Course) 314455: Internship		
Teaching Scheme:	Credit Scheme:	Examination Scheme:
Theory (TH) : 4 hrs/week	04 Credit	Team work: 100 Marks
Prerequisite Courses: if Any		
Course Objectives:		
<ul style="list-style-type: none"> ● To encourage and provide opportunities for students to get professional/personal experience through internships. ● To learn and apply the technical knowledge gained from academics /classroom learning in real life/industrial situations. ● To get familiar with various tools and technologies used in industries and their applications. ● To enable students to develop professional skills and expand their professional network with the development of employer-valued skills like teamwork, communication. ● To apply the experience gained from industrial internship to the academic course completion project. ● To nurture professional and societal ethics in students ● Understand the social, economic and administrative considerations that influence the working environment of industrial organizations 		
Course Outcomes:		
On completion of the internship, learner will be able to –		
CO1: Develop professional competence through industry internship.		
CO2: Apply academic knowledge in a personal and professional environment		
CO3: Build the professional network and expose students to future employees.		
CO4: Apply professional and societal ethics in their day-to-day life.		
CO5: Become a responsible professional having social, economic and administrative considerations.		
CO6: Make own career goals and personal aspirations.		
Guidelines:		
<p>Internships are educational and career development opportunities, providing practical experience in a field or discipline. Internships are far more important as the employers are looking for employees who are properly skilled and having awareness about industry environment, practices and culture. Internship is structured, short- term, supervised training often focused around particular tasks or projects with defined time scales.</p> <p>Core objective is to expose technical students to the industrial environment, which cannot be simulated/experienced in the classroom and hence creating competent professionals in the industry and to understand the social, economic and administrative considerations that influence the working environment of industrial organizations.</p> <p>Engineering internships are intended to provide students with an opportunity to apply theoretical knowledge from academics to the realities of the field work/training. The following guidelines are proposed to give academic credit for the internship undergone as a part of the Third Year Engineering curriculum.</p>		



Duration:
Internship to be completed after semester 5 and before commencement of semester 6 of at least 4 to 6 weeks; and it is to be assessed and evaluated in semester 6.
Internship work Identification:
<p>Student may choose to undergo Internship at Industry/Govt./NGO/MSME/Rural Internship/Innovation/IPR/Entrepreneurship. Student may choose either to work on innovation or entrepreneurial activities resulting in start-up or undergo internship with industry/NGO's/Government organizations/Micro/Small/ Medium enterprises to makethemselves ready for the industry.</p> <p>Contacting various companies for Internship and Internship work identification process should be initiated in the Vth semester in coordination with training and placement cell/ industry institute cell/ internship cell. This will help students to start their internship work on time. Also, it will allow students to work in vacation period after their Vth semester examination.</p> <p>Student can take internship work in the form of Online/onsite work from any of the following but not limited to:</p> <ul style="list-style-type: none"> • Working for consultancy/ research project, • Participation at Events (Technical / Business)/in innovation related completions like Hackathon, • Contribution in Incubation/ Innovation/ Entrepreneurship Cell/ Institutional Innovation Council/ startups cells of institute / • Learning at Departmental Lab/Tinkering Lab/ Institutional workshop, • Development of new product/ Business Plan/ registration of start-up, • Participation in IPR workshop/Leadership Talks/ Idea/ Design/ Innovation/ Business Completion/ Technical Expos, • Industry / Government Organization Internship, • Internship through Internshala, • In-house product development, intercollegiate, inter department research internship under research lab/group, micro/small/medium enterprise/onle ineinternship, • Research internship under professors, IISC, IIT's, Research organizations, • NGOs or Social Internships, rural internship, • Participate in open source development.
Internship Diary/ Internship Workbook:
<p>Students must maintain Internship Diary/ Internship Workbook. The main purpose of maintaining diary/workbook is to cultivate the habit of documenting. The students should record in the daily training diary the day-to-day account of the observations, impressions, information gathered and suggestions given, if any. The training diary/workbook should be signed after every day by the supervisor/ in charge of the section where the student has been working.</p> <p>Internship Diary/workbook and Internship Report should be submitted by the students along with attendance record and an evaluation sheet duly signed and stamped by the industry to the Institute immediately after the completion of the training. Internship Diary/workbook may be evaluated on the basis of the following criteria:</p> <ul style="list-style-type: none"> • Proper and timely documented entries • Adequacy & quality of information recorded • Data recorded • Thought process and recording techniques used • Organization of the information

Internship Work Evaluation:

Every student is required to prepare a maintain documentary proofs of the activities done by him as internship diary or as workbook. The evaluation of these activities will be done by Programme Head/Cell In-charge/ Project Head/ faculty mentor /faculty or Industry Supervisor based on- Overall compilation of internship activities, sub-activities, the level of achievement expected, evidence needed to assign the points and the duration for certain activities.

Assessment and Evaluation is to be done in consultation with internship supervisor (Internal and External – a supervisor from place of internship).

Recommended evaluation parameters-Post Internship Internal Evaluation -50 Marks +Internship Diary/Workbook and Internship Report - 50 Marks

Evaluation through Seminar Presentation/Viva-Voce at the Institute-

The student will give a seminar based on his training report, before an expert committee constituted by the concerned department as per norms of the institute. The evaluation will be based on the following criteria:

- Depth of knowledge and skills Communication & Presentation Skills
- Team Work
- Creativity
- Planning & Organizational skills
- Adaptability
- Analytical Skills
- Attitude & Behavior at work

- Societal Understanding
- Ethics
- Regularity and punctuality
- Attendance record
- Log book
- Student's Feedback from External Internship Supervisor

After completion of Internship, the student should prepare a comprehensive report to indicate what he/she has observed and learnt in the training period. The student may contact Industrial Supervisor/ Faculty Mentor/Faculty/TPO for assigning special topics and problems and should prepare the final report on the student's presence physically, if the student is found absent without prior intimation to the department/institute/concern authority/T & P Cell, entire training can be cancelled.

The report shall be presented covering following recommended fields but limited to,

- Title/Cover Page
- Internship completion certificate
- Internship Place Details- Company background-organization and activities/Scope and object of the study / personal observations
- Index/Table of Contents
- Introduction

Title/Problem statement/objectives Motivation/Scope and rationale of the study Methodological details

Results / Analysis /inferences and conclusion

Suggestions / Recommendations for improvement to industry, if any Attendance Record

Acknowledgement

List of reference (Library books, magazines and other sources)

Feedback from internship supervisor(External and Internal)

Post internship, faculty/faculty coordinator should collect feedback about student with following recommended parameters-

Technical knowledge, Discipline, Punctuality, Commitment, Willingness to do the work, Communication skill, individual work, Team work, Leadership.

Savitribai Phule Pune University, Pune Final Year Information Technology (2019 Course) 414448: Project Stage I		
Teaching Scheme:	Credit Scheme:	Examination Scheme:
Tutorial (TUT): 02 hrs/week	02 Credits	Term Work: 50 Marks
Prerequisite Courses, if any: PBL, Seminar, Basic Knowledge of Latest Technologies in IT.		
Companion Course, if any: NOT APPLICABLE		
Course Objectives: <ol style="list-style-type: none"> 1. To build up their practical experience with implementation and hence develops self-confidence. 2. To generate the opportunities to experience practically the facts learned in various fields together. 3. To improve overall communication skill, Teamwork and Leadership Qualities, professionalism. 4. To apply the knowledge for solving realistic problems. 5. To evaluate alternative approaches and justify the use of selected tools and methods. 		
Course Outcomes: On completion of the course, students will be able to– <ol style="list-style-type: none"> CO1. To apply knowledge of mathematics, science, and engineering to formulate the Problem statement. CO2. To design and conduct experiments, as well as to analyze and interpret data. CO3. Understand the professional and ethical responsibility. CO4. To communicate effectively. CO5. Get broad education which is necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context. CO6. Recognition of the need for, and an ability to engage in life-long learning. CO7. To use the techniques, skills, and modern engineering tools necessary for engineering practices. CO8. To design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability. 		
Introductory Information: BE Project can be application oriented and/or will be based on some innovative work in recent technologies like IoT, Cloud Computing, Web Technologies, Bio-inspired Algorithms, Artificial Intelligence, Machine Learning, Natural Language Processing, Theoretical Computer Science fundamentals. In Project Phase-I the student will undertake 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. 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 based on their internship or Guide can suggest based on recent technologies / Industrial Applications.		

Guidelines to Faculty and Students:

- 1) The Head of the department / Project coordinator shall constitute a review committee (preferably same committee needs to carry throughout the year) for project group; project guide would be one member of that committee by default.
- 2) For sponsored projects, an employee of the sponsoring organization may be one of the member of review committee.
- 3) There shall be **TWO** reviews in Project phase –I (in semester-I) by the review committee.
- 4) The Project Review committee will be responsible for evaluating the timely progress of the projects. It is suggested to evaluate the skills learned by the students in their PBL (in their previous years).
- 5) Student should identify project of enough complexity, which has at least 4-5 major functionalities.
- 6) Student should adopt skills learned in Software Engineering / Software Architecture to identify stakeholders, actors, Architectural Styles etc... and write detail problem statement for the system.
- 7) Review committee should finalize the scope of the project.
- 8) 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 which should be approved by review committee.
- 9) Every student of the project group shall make presentation on the progress made by them before the committee during each review. Each student/group is required to give presentation as part of review for 10 to 15 minutes followed by a detailed discussion and query session.
- 10) Students need to note down the queries raised during review(s) and comply the same in the next review session.
- 11) The record of the remarks/suggestions of the review committee (project diary) should be properly maintained and should be made available at the time of university examination.
- 12) Project group needs to present / publish **TWO** papers (One in each semester, at least one paper should be in **UGC – Care journal**).
 - a) Paper must be checked for Plagiarism by any open software.
 - b) One paper during first semester which includes Literature Survey and Detailed design components of the Project Statement.
 - c) One paper during second semester which includes Methodologies / Algorithms implemented, Results obtained, Analysis of results and conclusion.
- 13) Project report must also be checked for Plagiarism.
- 14) The examinee will be assessed by a panel of examiners of which one is necessarily an external examiner. The assessment will be broadly based on work undergone, content delivery, presentation skills, documentation, question-answers, and report.

Review 1: Synopsis –

Points to be covered:

- 1) The precise problem statement/title based on literature survey and feasibility study.
- 2) Motivation, objectives, and scope of the project.
- 3) List of required hardware, software, or other equipment for executing the project, test Environment/tools, cost and software measurement/human efforts in hours.
- 4) System overview- proposed system and expected outcomes.
- 5) Architecture and initial phase of design (DFD).

Review 2: Requirement and Design Specification

Points to be covered:

- 1) User and System Requirements.
- 2) Functional and Non-functional Requirements.
- 3) SRS Document, Writing structures SRS as per Problem Statement.
- 4) Requirement Analysis / Models.
- 5) UML/ER Diagrams.
- 6) Detail architecture / System design/ Algorithms with analysis / Methods / Techniques.
- 7) Need to discuss Design models and Component level designs.
- 8) Detailed Design (DFD levels as per the problem statement).
- 9) At least 30-40% coding documentation with at least 3 to 4 working modules.
- 10) Identification of test to be essential and appropriate (to be implement later).
- 11) Project plan.

Evaluation Criteria:

Following criteria and weightage is suggested for evaluation of Project-Phase I Term Work.

- 1) Originality of Problem Statement: 10% (05 Marks)
- 2) Depth of Understanding the Problem Statement: 10% (05 Marks)
- 3) Concrete Literature Survey with identified gaps in all referred papers: 10% (05 Marks)
- 4) Design and Analysis of Algorithm / Model / Architecture / System: 40% (20 Marks)
- 5) Representation of results using suitable tools like tabulation, graph etc: 10% (05 Marks)
- 6) Presentation Skill: 10% (05 Marks)
- 7) Report preparation and Paper publication: 10% (05 Marks)

Project report contains the details as Follows:

Project report must have:

- i. Certificate from the institute
- ii. Certificate sponsoring organization (If any)
- iii. Acknowledgement
- iv. Abstract
- v. Contents
- vi. List of Abbreviations (As applicable)
- vii. List of Figures (As applicable)
- viii. List of Graphs (As applicable)
- ix. List of Tables (As applicable)
 1. Introduction and aims/motivation and objectives.
 2. Literature Survey (with proper citation).
 3. Problem Statement/definition.
 4. Software Requirement Specification (In SRS Documentation only).
 5. Flowchart
 6. Project Requirement specification.
 7. Proposed system Architecture.
 8. High level design of the project (DFD,UML, ER Diagrams).
 9. System implementation-code documentation: Algorithm style, Description of detailed methodologies, protocols used etc..as applicable.
 10. Test cases.
 11. Proposed GUI/Working modules/Experimental Results (Module wise if available) in suitable format.
 12. Project Plan.
 13. Conclusions.
 14. Bibliography in IEEE format.

Appendices:

- A. Plagiarism Report of Paper and Project report from any open-source tool.
- B. Base Paper(s) [If any].
- C. Tools used / Hardware Components specifications [If any].
- D. Published Papers and Certificates.

Use appropriate plagiarism tools, reference managers, Latex for efficient and effective project writing.

Reference Books:

1. UML2 Bible by Tom Pender, Wiley India Pvt. Limited 2011
2. Applying UML and Patterns Second Edition by Craig Larman, Pearson Education
3. UML 2 and the Unified Process, Second Edition, JIM Arlow, Ila Neustadt, Pearson
4. Design Patterns: Elements of Reusable Object-Oriented Software, Erich Gamma, Pearson
5. Design Patterns in Java Second Edition by Steven John Metsker, Pearson

All the assignments should be conducted on Latest version of Open-Source Operating Systems, tools and Multi-core CPU supporting Virtualization and Multi-Threading

Savitribai Phule Pune University, Pune Final Year Information Technology (2019 Course) 414456 : Project-II		
Teaching Scheme:	Credit Scheme:	Examination Scheme:
Practical: 10 hrs/week	05 Credits	Term Work : 100 Marks Oral : 50 Marks
Prerequisite Courses, if any: Project Phase-I (B.E. (IT) Final Year Semester-I)		
Companion Course, if any: NA		
Course Objectives:		
<ol style="list-style-type: none"> 1. To enable the student to extend further the investigative study taken up under Project stage-I, either fully theoretical/practical or involving both theoretical and practical work, under the guidance of a Supervisor from the Department alone or jointly with a Supervisor drawn from R&D laboratory / Industry. 2. To build up exposure of implementation and hence develops analysis of results by considering performance measures. 3. To expose students to product development environment using industrial experience, use of state of art technologies. 4. To encourage and expose students with funding agency for sponsored projects. 5. To generate the opportunities to experience practically the facts learned in various fields together. 6. To improve overall communication skill, Teamwork and Leadership Qualities, professionalism. 7. Evaluate the various validation and verification methods. 8. Analyzing professional issues, including ethical, legal and security issues, related to computing projects. 9. To evaluate alternative approaches, and justify the results obtained. 		
Course Outcomes:		
On completion of the course, students will be able to–		
<ol style="list-style-type: none"> 1. To apply engineering and mathematical knowledge to investigate / select proper technology / Algorithm suitable to solve the problem in hand. 2. To apply knowledge of statistics for analysis of results and express conclusion and justification for the same. 3. To design and conduct experiments, as well as to analyze and interpret data or develop prototype model of the application. 4. To communicate effectively. 5. Get broad education which is necessary to understand the impact of engineering solutions in a global, economic, environmental, ethically and societal context. 6. Recognition of the need for, and an ability to engage in life-long learning. 		
Introductory Information:		
BE Project Phase-II is the continuation of Project Phase-I for implementation, and analysis of results to arrive a valid conclusion with justification.		
Guidelines to Faculty and Students:		

1. Preferably same review committee needs to continue for Project Phase-II.
2. There shall be **TWO** reviews in Project phase –II (in semester-II) by the review committee.
3. The Project Review committee will be responsible for evaluating the timely progress of the projects. It is suggested to evaluate the skills learned by the students in their PBL (in their previous years).
4. Student needs to justify the Algorithm / Model used for implementation.
5. Every student of the project group shall make presentation on the progress made by them before the committee during each reviews. Each student/group is required to give presentation as part of review for 10 to 15 minutes followed by a detailed discussion and query session.
6. Students need to note down the queries raised during review(s) and comply the same in the next review session.
7. The record of the remarks/suggestions of the review committee (project diary) should be properly maintained in continuation of Project Phase-II and should be made available at the time of university examination.
8. Project group needs to present / publish **TWO** papers (One in each semester, at least one paper should be in **UGC – Care journal**).
 - a. Paper must be checked for Plagiarism by any open software.
 - b. One paper during second semester which includes Methodologies / Algorithms implemented, Results obtained, Analysis of results and conclusion.
9. Project report must also be checked for Plagiarism.
10. The examinee will be assessed by a panel of examiners of which one is necessarily an external examiner. The assessment will be broadly based on work undergone, content delivery, presentation skills, documentation, question-answers and report.

Review 3: Implementation –

Points to be covered:

1. Detailed study of Algorithm(s) / Model / Hardware specification (As applicable).
2. Confirmation of Data set used (As applicable)
3. Detailed ER Diagram / DFD diagrams.
4. Detailed UML Diagrams.
5. Sample results (module based).

Review 4: Testing and Result Analysis.

Points to be covered:

1. Appropriate test cases and results of test cases.
2. Representation of results with analysis.
3. Conclusion over performance parameters (as applicable)
4. Conclusion and future work suggested.
5. Knowledge of references utilized.

Evaluation Criteria:

Following criteria and weightage is suggested for evaluation of Project-Phase II Term Work.

- | | |
|---|-----|
| 1. Availability of standard Data set / Input parameters: | 10% |
| 2. Depth of Understanding of implemented Technology / Algorithm / Domain / Model: | 40% |
| 3. Test cases / Validation and Verification process: | 10% |
| 4. Justification of Algorithm / Model / Architecture / System: | 10% |
| 5. Analysis of results and conclusion: | 10% |
| 6. Presentation Skill: | 10% |
| 7. Report preparation and Paper publication: | 10% |

Project report contains the details as Follows:

It is suggested to have only one Project report which includes work carried at Project Phase-I as well. Project report must have:

- i. Certificate from the institute.
- ii. Certificate sponsoring organization (If any).
- iii. Acknowledgement.
- iv. Abstract.
- v. Contents.
- vi. List of Abbreviations (As applicable).
- vii. List of Figures (As applicable).
- viii. List of Graphs (As applicable).
- ix. List of Tables (As applicable).
 - 1) Introduction and aims/motivation and objectives.
 - 2) Literature Survey (with proper citation).
 - 3) Problem Statement/definition.
 - 4) Software Requirement Specification (In SRS Documentation only).
 - 5) Flowchart
 - 6) Project Requirement specification.
 - 7) Proposed system Architecture.
 - 8) High level design of the project (DFD , UML , ER Diagrams).
 - 9) System implementation-code documentation: Algorithm style, Description of detailed methodologies, protocols used etc..as applicable.
 - 10) Test cases.
 - 11) GUI/Working modules and Experimental Results in suitable format.
 - 12) Project Plan.
 - 13) Analysis and Conclusions with future work.
 - 14) Bibliography in IEEE format.

Appendices

- a) Plagiarism Report of Paper and Project report from any open source tool.
- b) Base Paper(s) [If any].
- c) Tools used / Hardware Components specifications [If any].
- d) Published Papers and Certificates (Both Papers).

Use appropriate plagiarism tools, reference managers, Latex for efficient and effective project writing.