Faculty of Science and Technology

Savitribai Phule Pune University

Maharashtra, India

Project Work Book

Fourth Year

Artificial Intelligence and Data Science (2019 Course)

(With effect from A.Y. 2023-24)

Project Work Book

(Guidelines and Logbook)

Course Code: 417527 & 417536

(2020 Course)

Group ID/No :

Project Syndicate

Sr.	Name of the student	Phone No
1	ABC, Project Leader	
2	ABC1, Member	
3		
4		

Project Title: . . . .

Project Domain/Area : . . . .
. .

Project Guide (Internal) : . . . .
. .

Project Guide (External) : . . . .
. . .

Sponsorship: . . . .
. .

College Logo
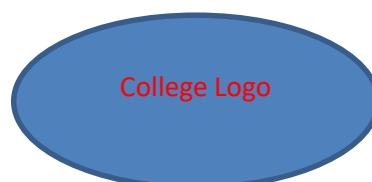
Department of Artificial Intelligence and Data Science

Your College Name

Academic Year : 2023-24

Preamble

Project work is one of the most important components of the curriculum for an Engineering Graduate. Right from conceiving the idea to its materialization, is a journey that has to be systematized, well defined and well documented to enjoy the full benefits of the efforts undertaken. Every activity of the project development has its own importance. Team formation, conceiving the idea, preparing the hypothesis, reporting the progress and development to the guide(/mentor), Interactions, suggestions and improvements, relevant documentations in proper format, schedule plans and visit logs are some of the typical activities involved in project development. Every institute is following their own best methods and techniques as per the guidelines and curriculum of the affiliated university. To bring uniformity for the project work there is a need to come together and prepare comprehensive guidelines and to standardize the process. This project work book will serve the purpose and facilitate the job of students, guide and project coordinator. This document will reflect accountability, punctuality, technical writing ability and work flow of the work undertaken. This document will definitely support the work undertaken.

Dr. Nilesh J. Uke

Chairman, Board of Studies Computer Engineering

Savitribai Phule Pune University

General Instruction

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 member 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 counter signed by the concerned project guide.

9. For any query, concerned guide should be consulted.

Program Educational Objectives

PEO1. To prepare globally competent graduates having strong fundamentals, domain knowledge, updated with modern technology to provide the effective solutions for engineering problems.

PEO2. To prepare the graduates to work as a committed professional with strong professional ethics and values, sense of responsibilities, understanding of legal, safety, health, societal, cultural and environmental issues.

PEO3. To prepare committed and motivated graduates with research attitude, lifelong learning, investigative approach, and multidisciplinary thinking.

PEO4. To prepare the graduates with strong managerial and communication skills to work effectively as an individual as well as in teams.

Program Outcomes

Students are expected to know and be able –

PO1. To apply knowledge of mathematics, science, engineering fundamentals, problem solving skills, algorithmic analysis and mathematical modeling to the solution of complex engineering problems.

PO2. To analyze the problem by finding its domain and applying domain specific skills

PO3. To understand the design issues of the product/software and develop effective solutions with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.

PO4. To find solutions of complex problems by conducting investigations applying suitable techniques.

PO5. To adapt the usage of modern tools and recent software.

PO6. To contribute towards the society by understanding the impact of Engineering on global aspect.

PO7. To understand environment issues and design a sustainable system.

PO8. To understand and follow professional ethics.

PO9. To function effectively as an individual and as member or leader in diverse teams and interdisciplinary settings.

PO10. To demonstrate effective communication at various levels.

PO11. To apply the knowledge of Artificial Intelligence and Data Science for development of projects, and its finance and management.

PO12. To keep in touch with current technologies and inculcate the practice of lifelong learning.

Program Specific Outcomes (PSO)

A graduate of the Artificial Intelligence and Data Science Program will demonstrate-

PSO1: Professional Skills-The ability to understand, analyze and develop computer programs in the areas   related to algorithms, system software, multimedia, web design, big data analytics, and networking for efficient design of computer-based systems of varying complexities.

PSO2: Problem-Solving Skills- The ability to apply standard practices and strategies in software project development using open-ended programming environments to deliver a quality product for business success.

PSO3: Successful Career and Entrepreneurship- The ability to employ modern computer languages, environments, and platforms in creating innovative career paths to be an entrepreneur, and a zest for higher studies.

TABLE OF CONTENTS

1. Project Work

The word *project* comes from the Latin word *projectum* from the Latin verb *proicere*, "to throw something forwards" which in turn comes from *pro-*, which denotes something that precedes the action of the next part of the word in time (paralleling the Greek πρό) and *iacere*, "to throw". The word "project" thus actually originally meant" something that comes before anything else happens". (Curtsey Ref-http://en.wikipedia.org/) The intention of Project work is to conceive an idea and to implement it systematically by using knowledge derived during the course of education mainly to innovate or facilitate.

A group of Under Graduate students at Final Year will undertake project over academic year. Work involves study of feasibility of the project, planning of project, studying existing systems, tools available to implement the project and state of art software testing procedures and technology with use of case tools, design is to be implemented into a working model (software or hardware or both) with necessary software interface as an executable package.

1.1 Project Review Committee (PRC):

It is recommended to form a departmental "Project Review Committee" to monitor project activities comprising of Head, Project Coordinator, Industry Expert(s), External Expert(s), Department Academic Coordinator and few senior guides.

1.2 Mapping of Course Outcomes (CO) of Project Work and Program Outcomes (PO) for Stage-I:

The proper assessment of the COs and POs is one of the most important processes and it is to be done with precision and planning. It is recommended to assess the students continuously as they progress through the program. It is collectively one or more processes that define, collect, and prepare data to evaluate the achievement of Program Outcomes. Every COs are to be mapped to different POs based on their influence of COs on them. Sample mapping of PO and CO for project work stage I is given in table 1.

Table 1: Mapping of CO and PO

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3		3	3	2	2	3	3	2		2
CO2	3	3		3	3	2	2	3	3			2
CO3	2	3	2	3	3	3	2	3	3		3	2
CO4								3	3	3	2	2
CO5								2	3	3	2	2

Course Objectives

➢ To Apply the knowledge for solving realistic problem

➢ To develop problem solving ability

➢ To Organize, sustain and report on a substantial piece of team work over a period of several months

➢ To Evaluate alternative approaches, and justify the use of selected tools and methods

➢ To Reflect upon the experience gained and lessons learned

➢ To Consider relevant social, ethical and legal issues

➢ To find information for yourself from appropriate sources such as manuals, books, research journals and from other sources, and in turn increase analytical skills

➢ To Work in team and learn professionalism

Course Outcomes: On completion of the course, student will be able to–

CO1: Solve real life problems by applying knowledge

CO2: Analyze alternative approaches, apply and use most appropriate one for feasible solution

CO3: Write precise reports and technical documents in a nutshell

CO4: Participate effectively in multi-disciplinary and heterogeneous teams exhibiting team work

CO5: Inter-personal relationships, conflict management and leadership quality

Mapping of Course Outcomes (CO) of Project Work and Program Outcomes (PO) for Stage-II :

The proper assessment of the COs and POs is one of the most important processes and it is to be done with precision and planning. It is recommended to assess the students continuously as they progress through the program. It is collectively one or more processes that define, collect, and prepare data to evaluate the achievement of Program Outcomes. Every COs are to be mapped to different POs based on their influence of COs on them. Sample mapping of PO and CO for project work stage II is given in table 2.

Table 2: Mapping of CO and PO

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1							2	3	3	3		3
CO2	2	3	3	3	3	3	2	3	3		3	2
CO3	1	3	3	3	3	3	2	3	3		3	2
CO4		3	3	3	3		2	3	3		3	2
CO5								3	2	2	2	2

Course Objectives:

➢ To follow SDLC meticulously and meet the objectives of proposed work

➢ To test rigorously before deployment of system

➢ To validate the work undertaken

➢ To consolidate the work as furnished report

Course Outcomes:

After completion of the course, learners should be able to-

CO1:   Show evidence of independent investigation

CO2:   Critically analyze the results and their interpretation

CO3:   Report and present the original results in an orderly way and placing the open questions in the right perspective

CO4: Link techniques and results from literature as well as actual research and future research lines with the research

CO5: Appreciate practical implications and constraints of the specialist subject

Semester I – Syllabus (Stage I)

Guidelines

Project work Stage – I is an integral part of the Project work. In this, the student shall complete the partial work of the Project which will consist of problem statement, literature review, SRS, Model and Design. The student is expected to complete the project at least up to the design phase. As a part of the progress report of project work Stage-I, the candidate shall deliver a presentation on the advancement in Technology pertaining to the selected project topic. The student shall submit the duly certified progress report of Project work Stage-I in standard format for satisfactory completion of the work by the concerned guide and head of the Department/Institute. 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.

SEMESTER II – SYLLABUS (STAGE II)

Guidelines

In Project Work Stage–II, the student shall complete the remaining project work which consists of Selection of Technology and Tools, Installations, UML implementations, testing, Results, performance discussions using data tables per parameter considered for the improvement with existing/known algorithms/systems and comparative analysis and validation of results and conclusions. The student shall prepare and submit the report of Project work in standard format for satisfactory completion of the work that is the duly certified by the concerned guide and head of the Department/Institute.

1.3 Guideline for Project Selection, Finalization and Guide Allotment

General Instructions

1. Students should enter correct information in the work book and get verified by respective project guide(s) and Project Coordinator.
2. Students should report to their respective guides as per the schedule and its log is to be maintained in the work book.
3. Follow all deadlines and submit all documents strictly as per prescribed formats.
4. The work book should be produced at the time of all discussions, presentations and examinations.
5. The work book must be submitted to project coordinator/ guide/ department / College / University after successful examination at the end of year or whenever asked for.
6. All documents and reports are to be prepared in Latex/Lyx only (All the formats specifications provided adheres to MS Word but consequently applicable to finalized project report published using Latex/Lx)
7. Students can use online tools like overleaf, papeeria, latexbase etc for effective collaborations with group members and project guides.
8. Submit Black Book (number of students+2 copies) as well as soft copy and maintain copy with each member.

Guidelines for Project Group Formation:

1. Project group may consist of **THREE to FOUR** students in one project group.
2. Students of other programme/course may be part of the project group; in such case the group strength can be up to **SIX** students to promote inter disciplinary project topic.
3. In the process of finalization of project groups, Project Coordinator(s) can ensure to have combination of bright and weak students in a group and also to provide the flexibility of choosing the group partners.
4. Group leader submit the project registration form to the project coordinator.

5. Individual member of the group must be allocated with the specific tasks/modules from the project and their contributions must be seen at the time of evaluation and assessment.

6. Every project group member MUST demonstrate his/her significant contributions in development of the project.

Guidelines for Project Topic:

1. Project is one of the significant contributory team works that has to be completed with distinct impression. It is necessary to explore the domain of interest / research/ thrust area/ societal needs. In to one cannot figuratively define best project but still there are certain parameters on which we can gauge the quality of project work done. It will be better suited to go for well-defined and relatively safe projects that provide scope for demonstrating proficiency with a low risk of failure especially at Under Graduate level.

2. Undergraduate project is a capstone of engineering education. Therefore, it is very important to select a right topic.

3. Project can be undertaken on any subject addressing recent advancement in Artificial Intelligence, Data Science domain. Research and development projects on problems of practical and theoretical interest should be encouraged.

4. Students can certainly take ideas from anywhere, but be sure that they should evolve them in the unique way to suit their project requirements.

5. The project work can be undertaken in a research institute or organization/company/any business establishment.

6. Student must consult internal guide along with external guide (if any) in selection of topic.

7. Project Coordinator, Head of department and senior staff in the department will take decision regarding selection of projects.

8. In case of industry projects, visit by internal guide is preferred, at last once during the semester.

Guidelines for Project Guides: -

1. Considering the area of interest/domain and expertise of guide, the Project coordinator in consultation with PRC tentatively allots Project guides.

2. Project Groups may come up with sponsored project (Title suggestion and associated guidance by external institute/Company).

3. Project Proposal must include project title, group member details, sponsorship details (if any), detailed problem definition, area, Type of Project [Sponsored/Non Sponsored, AND viz- 1. Framework, 2. System as - Application/ Systems Software with or without Hardware 3. Research, 4. Survey], abstract, details of existing similar systems if any, scope of the project and software-hardware requirements. [Sponsorship details include name of sponsoring authority, address, name of guide, sponsorship terms and conditions and respective documents certifying the same from authorities].

4. PRC should ensure the use of Artificial Intelligence and Data Science concepts or technologies in their project.

5. A Panel of experts will approve the project group and title. Discussion / presentation may be arranged covering topics listed in the proposal.

6. Once project titles are finalized by PRC, guides are reallocated/ changed, if required.

7. It is recommended to seek guidance from PG students and/or alumni.

8. It is recommended to maintain record of all meetings, discussions, suggestions, contributions and roles played by each member of the team.

1.4 General Project Evaluation Parameters:

Project work is to be evaluated jointly by both Internal and External examiners, unanimously agreeing upon the following parameters amongst many others.

1. Problem definition and scope of the project.

2. Thorough literature survey.

3. Exhaustive and rational requirement analysis.

4. Appropriate software engineering approach followed.

5. Use of project management tools.

6. Use of Artificial Intelligence and Data Science Concepts.

7. Comprehensive implementation

8. Optimization considerations (memory, time, resources, costing).

9. Use of parallel/multi-core, embedded, distributed computing approach.

10. Thorough testing of all modules and integration of modules done.

11. Project presentation and demonstration.

12. User interface, ease of use, usability and GUI.

13. Understanding individual capacity, role and involvement in the project.

14. Team work (roles defined, distribution of work, intra-team communication and togetherness).

15. Participation in various contests (like SIH, Project Competitions), publications and IPR.

16. Presentation of work in the form of project report(s). Documents /manuals - project report, quick reference, system, installation guide etc

17. Outcomes / usability/ commercial value/ product conversion of work

18. Consideration of social, safety, environmental, ethical and legal issues.

1.5 Participation in Project Competition/Exhibition Guidelines:

Project Competition / Exhibition is a technical event in which the students should present implemented project. Students should participate in at least one project competition or exhibition by concerning with project guide.

Colleges can come together to organize the Poster Competitions in Semester I and Project Competition / Exhibition in Semester II. Industry personal and alumni can be invited to evaluate the best projects.

Students are encouraged to actively participate in Avishkar, Smart India Hackathons and Project competitions organized by the SPPU affiliated institutes.

1.6 Publications Guidelines:

The work undertaken is to be appreciated and recognized by the significant publications and/or IPR. The quality of the publications reflects the efforts and recognition of the work.

It is recommended to publish work in consultation with the guide in referred national and international Journals and/or conferences of repute. Guides can suggest appropriate UGC CARE journals for publications or Scopus conference. They should refrain from publication in clone and Predatory journals. Refer the List of Cloned Journals UGC-CARE Group II at

https://ugccare.unipune.ac.in/apps1/home/index

Students can also participate in various Hackathons and Project competitions organized by the SPPU affiliated institutes.

UNDERTAKING BY STUDENTS

With reference to circular (ref-project/2009/3369) regarding malpractices in project work from DTE, Pune following undertaking is to be submitted.

UNDERTAKING BY STUDENT

We, the students of B.E. Artificial Intelligence and Data Science hereby assure that we will follow all the rules and regulations related to project activity for the academic year 2023-24. The Project titled . . . .

will be fully designed/ developed by us and every part of the project will be original work and will not be copied/ purchased from any source. We also declare that this project represents our ideas in our own words without plagiarism and wherever others' ideas or words have been included, we have adequately cited and referenced the original sources.

We also declare that we have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in our project work.

We promise to maintain minimum 75% attendance, as per the Savitribai Phule Pune University norms. We understand that any violation of the above will be cause for disciplinary action by the Institute.

Name of the student   Signature

    1.

    2.

    3.

    4.

2. Schedule of Project Work

Semester I

Sr. No.	Activity Scheduled	Deadline
1.	Registration of Project Teams	Year Semester II/ Mid of June
2.	Submission of Project Proposal	Last Week of June
3.	Project presentations	First week of July
4.	Finalization of projects & allotment of guide	Second week of July
5.	Submission of final Proposal	Third week of July
6.	Project Review I - **(Completion of Literature Survey)**	Last week of July
7.	Project Review II – **(Completion of SRS)**	Third week of August
8.	Project work III – **(Completion of Design)**	Second week of Sept
9.	Verification of Project Work Book By Internal Guide (before submission of Preliminary Project Report)	Third week of Sept
10.	Submission of Project Report Stage I	1st Week Oct
11.	Project Stage I Examination	As per SPPU Notification

Semester II

Sr.	Activity Scheduled	Deadline
1.	FTR (Formal Technical Review) **– I (30% Coding Completed/Two Modules)**	Third week of Semester Commencement
2.	FTR(Formal Technical Review) – **II (60% Coding Completed/Two Modules)**	Seventh week of Semester Commencement
3.	Project Review **(90% Coding Completed) and Project Exhibition**	Tenth week of Semester Commencement

4.	Submission of Final Project Report and Project Work	Twelfth week of Semester Commencement
5.	Project Examination	As per SPPU Notification

3. Project Review (Semester I)

The group members are expected to present their work undertaken during the semester. Journey of development has to be rationally presented with thorough literature survey in review meeting.

3.1 Project Review-I:

Problem Statement, Motivation, Aim and Objectives and Literature Review

Project Group members are expected to deliver presentation covering Problem Statement, Motivation, Aim and Objectives and Literature Review.

Sr.	Question	Yes/No	Remark(s)
1)	Is the motivation of project clearly identified?		
2)	Is the aim of project clearly defined?		
3)	Are the listed objectives aligned to the aim of the project		
4)	Is the project problem statement short and concise?		
5)	Do similar type of methodology /systems /model exists?		
6)	Is the studied literature sufficient to decide scope of the project?		
7)	Can a laymen understand scope of the project by reading the project problem statement?		
8)	Does the project contribute to our Society by any means?		
9	Does the AIDS concepts used in the project		

Name and Sign of Reviewers:

1.

2.

PROJECT REVIEW–I

STUDENT PERFORMANCE EVALUATION

Student's Contribution Performance:				Marks (25M)
Particulars	**Group Members**			
	1	**2**	**3**	**4**
1. Background and Topic (4M)				
2. Project Scope and Objectives (4M)				
3. Literature Survey (5M)				
4. Project Planning (4 M)				
5. Presentation Skills (4M)				
6. Question and Answer (4M)				
Total (25M)				
Comments (if any)				

\# To be filled by internal guide & 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)

- Requirement, Test Environment/Tools

- (System Overview- Proposed system & Proposed outcome)

- Architecture & DFD

- References

- Project Plan 1.0

Name & Signature of evaluation committee-

Name of Reviewer 1   **Name of Reviewer 2**

                                          Name of Internal Guide

3.2 Project Review-II: SRS

Student is expected to deliver presentation covering Feasibility, Scope and SRS

Sr. No.	Question	Yes/No	Remark(s)
1)	Are the required identified clearly?		
2)	Is the project goal statement in alignment with the sponsoring organization's business goal and mission?		
3)	Who is the project's end user?		
4)	What is the projected cost of producing a product?		
5)	Is project achievable in specified (Time, Cost Budget)?		
6)	Are the requirements within the scope of the project?		
7)	Is the scope properly defined?		
8)	Does the problem statement clearly define scope of the project?		
9)	Do the project requirements fit into available software and hardware?		
10)	Whether the milestones are stated Completely and project timeline is given?		
11)	Whether risks like technical risks, Operational risks, schedule risks, business risks are identified Correctly or not?		
12)	Whether Risk prioritization is done properly and any back up plan is decided?		

Name and Sign of Reviewers:

1.

2.

PROJECT REVIEW–II STUDENT PERFORMANCE EVALUATION

Students' Contribution and Performance	Marks (25 M)			
Particulars	**Group Members**			
	1	**2**	**3**	**4**
1. System Architecture & Literature Survey (Review-I)				
2. Project Planning (4 M)				
3. Software Requirement Specification(8M)				
4. Requirement of Techniques/Methodology /Algorithms and Project Features (3 M)				
6. Presentation Skills (4 M)				
7. Question and Answer (2 M)				
8. Summarization of Ultimate findings of the Project (2 M)				
9. Test Results(2 M)				
Total (25 M)				
Comments (if any)				

To be filled by internal guide & 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)

- Architecture

- Software Requirement Specification

- Requirement of Design / algorithms / techniques used

- Modules Split-up

- Proposed System

- Software Tools/Technologies to be used

- Project Plan 2.0

Name & Signature of Evaluation Committee –

Name of Reviewer 1   **Name of Reviewer 2**

Name of Internal Guide

3.3 Project Review-III: Completion of Design

Student is expected to deliver presentation covering Design Document

Sr. No.	Question	Date	Remark / Grade	Sign of Guide
1)	Is information domain analysis complete, consistent and accurate?			
2)	Is problem statement categorized in identified area and targeted towards specific area there in?			
3)	Is external and internal interfacing properly defined?			
4)	Are requirements consistent with schedule, resources and budget?			
5)	All the modules are covered in the design of the project			
8)	Is identification of Users or stakeholders done properly?			
9)	Whether all requirements are captured and documented in line with scope?			
10)	Whether all type of analysis classes are identified?			
11)	Whether the Acceptance criteria is decided			
12)	Is SRS document as per IEEE format complete and correct?			

Remark and Suggestions:

Name and Sign of Reviewers:

1.

2.

PROJECT REVIEW–III STUDENT PERFORMANCE EVALUATION

Students' Contribution and Performance	Marks (25 M)			
Particulars	**Group Members**			
	1	**2**	**3**	**4**
1. System Architecture & Literature Survey (Review-II)				
2. Project Design (4 M)				
3. Techniques/Methodology /Algorithms and Project Features (3 M)				
4. Project Planning (4 M)				
5. Basic details of Implementation (Working module) (4 M)				
6. Presentation Skills (4 M)				
7. Question and Answer (2 M)				
8. Summarization of Ultimate findings of the Project (2 M)				
9. Test Results(2 M)				
Total (25 M)				
Comments (if any)				

\# To be filled by internal guide & 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

- 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

- Working module

- Partial Report (Semester – I)

- Project Plan 2.0

Name & Signature of Evaluation Committee –

    Name of Reviewer 1   **Name of Reviewer 2**

                                Name of Internal Guide

INTERNAL EVALUATION SHEET (SEMESTER I)

PROJECT REVIEW SUMMARY – I TO III

Summary of Project Work Evaluation Sheet

Note: Convert total marks 75 out of 50

Sr. No	Exam No.	Name Of Student	I	II	III	Total	Signature

Overall Remarks or Comments (if any)

Internal Guide

PARTICIPATION IN PROJECT
COMPETITION/EVENT/SEMINAR

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

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

Internal Guide   **Project coordinator**   **HOD**

4. PROJECT REVIEW: (SEMESTER II)

The group members are expected to present their work undertaken during the semester. Journey of development has to be rationally presented.

Project Review-I: Modeling (Model Refinement and Algorithm development)

Student is expected to deliver presentation covering Modeling

Sr. No.	Question	Date	Remark/ Grade	Sign of Guide
1)	Which Software Development Process used? (Water fall, Incremental, RAD) How?(all this level)			
2)	Are data objects, their attributes and Relationships clearly identified? (All constraints from SRS are captured or not?)			
3)	Have the objects and respective classes and their responsibilities?			
4)	Have you analyzed the requirements been analyzed and represented into respective models?			
5)	Have the different system states been differentiated and depicted them in the form of state transition diagram?			
6)	Does the mathematical model clearly imply design of the project?			
7)	Does the mathematical model clearly states goal of project?			
8)	Is the interface between the modules properly identified?			

9)	Are any functional dependencies identified and described?			
10)	Which architectural model does the system support?			
11)	Whether Deployment diagram is in line with selected architecture?			
12)	Whether all components are designed properly and represented in component diagram?			
13)	Whether NP-completeness of algorithms is checked?			
Remark and Suggestions:				

Name and Sign of Reviewers:

1.

2.

STUDENT PERFORMANCE EVALUATION

Students' Contribution and Performance	Marks (25 M)			
Particulars	Group Members			
	1	2	3	4
1. Architecture / System Design -(if any modification)				
2. Algorithm Development (10 M)				
3. Interface Identified (7 M)				
4. Presentation skills (4 M)				
5. Question and Answer (4 M)				
6. Summarize the methodologies / Algorithms				
7. implemented / to be implemented				
Total (25 M)				
Comments (if any)				

\# To be filled by internal guide & 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

- Detailed Design (if any deviation)

- Algorithm development

- Some Experimental Results

- Project Plan 3.0

Name & Signature of Evaluation Committee –

Name of Reviewer 1   **Name of Reviewer 2**

Name of Internal Guide

Project Review-II: Coding / Implementation

Student is expected to deliver presentation covering Coding / Implementation

Sr. No.	Question	Date	Remark/ Grade	Sign of Guide
1)	Does the code completely and correctly implement the design?			
2)	Does the code comply with the coding standard?			
3)	Is the code well structured, consistent in style, and consistently formatted?			
4)	Are all functions in the design coded?			
5)	Does the code make use of object oriented concepts?			
6)	Does the code support granularity?			
7)	Is the language used for coding correctly chosen as per the project need?			
8)	If any off-the-shelf components are used, Have you understood the functionalities of using it?			
9)	Are all comments consistent with the code?			
10)	Whether code optimization is done properly?(By using language features)			
Remark and Suggestions:				

Name and Sign of Reviewers:

1.

2.

STUDENT PERFORMANCE EVALUATION

Students' Contribution and Performance	Marks (25 M)			
Particulars	**Group Members**			
	1	**2**	**3**	**4**
Implementation with all interface (100%) (10 M)				
Results (7 M)				
Presentation skills (4 M)				
Question and Answer (4 M)				
Total (25 M)				
Comments (if any)				

\# To be filled by internal guide & 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

- Detailed Design

- 100% of code implementation

- Experimental Results

- Performance Evaluation

Name & Signature of Evaluation Committee –

Name of Reviewer 1   **Name of Reviewer 2**

Name of Internal Guide

Project Review-III: Validation and Testing

Student is expected to deliver presentation covering Validation and Testing

Sr. No.	Question	Date	Remark/ Grade	Sign of Guide
1.	Has alpha testing been done?			
2.	Has beta testing been done?			
3.	Have been validated the requirements, design and code as per standard?			
4.	Has GUI testing of project been performed? How?			
5.	Does the System Comply with basic usability norms?			
6.	Has the code been tested using standard Datasets available in your area of project?			
7.	Has the code been tested using standard dataset available in your area of project?			
8.	Has the code been tested in real time environment?			
9.	After integration of all components whether total performance of system is checked?			
10.	Whether repository of all components along with versions is documented?			
11.	Have social, safety, environmental, ethical and legal issues been considered while providing solution to problem?			
Remark and Suggestions:				

Name and Sign of Reviewers:

1.

2.

PROJECT REVIEW – III

STUDENT PERFORMANCE EVALUATION

Students' Contribution and Performance	Marks (25 M)			
Particulars	**Group Members**			
	1	**2**	**3**	**4**
Performance Comparison (4M)				
Validation and Testing (13 M)				
Presentation skills (4 M)				
Question and Answer (4 M)				
Total (25 M)				
Comments (if any)				

\# To be filled by internal guide & 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

- Validation and Testing

- Performance Evaluation

- Test Cases

- Result Analysis and Conclusion

Name & Signature of Evaluation Committee –

Name of Reviewer 1   **Name of Reviewer 2**

Name of Internal Guide

Project Review-IV: Report Writing

Student is expected to deliver presentation covering Report Writing

Sr. No.	Question	Date	Remark/ Grade	Sign of Guide
1)	Is the report writing as per the prescribed format?			
2)	Is the report timely prepared?			
3)	Is the report properly organized, spelled, grammatically correct?			
4)	Is the report plagiarism free?			
5)	Is the report precise and written to the point?			
6)	Does the report contain complete results and comparative graphs?			
7)	Are all figures and tables properly numbered and labeled?			
8)	Are all figures and tables properly cited?			
9)	Weather references are properly cited?			
Remark and Suggestions:				

Name and Sign of Reviewers:

1.

2.

PROJECT REVIEW – IV

STUDENT PERFORMANCE EVALUATION

Students' Contribution and Performance	Marks (25 M)			
Particulars	**Group Members**			
	1	**2**	**3**	**4**
Final Project Report (10 M)				
Publications (7 M)				
Presentation skills (4 M)				
Question and Answer (4 M)				
Total (25 M)				
Comments (if any)				

\# To be filled by internal guide & 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

- Final Report

Name & Signature of Evaluation Committee –

Name of Reviewer 1   **Name of Reviewer 2**

Name of Internal Guide

PROJECT REVIEW SUMMARY – I TO IV

Summary of Project Work Evaluation Sheet

Sr. No	Exam No.	Name Of Student	I	II	III	IV	Total	Signature

Overall Remarks or Comments (if any)

Signature of Guide   **PRC**   **Name and Signature [Name of Guide]**

                             Head of Department

CONTEST PARTICIPATION DETAILS

9.1 Participation in Project Competition

Sr. No.	Name and Place of Project Competition and Exhibition	Date	Certificates / prizes won, if any
1.			
2.			
3.			
4.			

Attach attested copy of certificate(s)

9.2 Paper Publication/ Presentation/IPR

Sr. No.	Name of Organizer	Date	Certificates/ Prizes won, if any
1.			
2.			
3.			
4.			

Attach attested copy of certificate(s)

RUBRICS

Idea Inception

Grade (Grade Point)	Excellent (10-9)	Very Good (6-8)	Fair (3-5)	Poor (1-2)
Parameter				
Problem Definition and Scope of the Project				
Literature Survey				
Software Engineering Approach				
Requirement Analysis				

Implementation

Grade (Grade Point)	Excellent (10-9)	Very Good (6-8)	Fair (3-5)	Poor (1-2)
Parameter				
Implementation- Design, platform, coding,				
Optimization considerations(Memory, time, Resources, Costing)				
Thorough Testing of all modules				
Integration of modules and project as whole				

Documentation

Grade (Grade Point)	Excellent (10-9)	Very Good (6-8)	Fair (3-5)	Poor (1-2)
Parameter				
Proposal				
Project Report				
Quick references				
System manual				
Installation Guide				
Work Book				

Demonstration

Grade (Grade Point)	Excellent (10-9)	Very Good (6-8)	Fair (3-5)	Poor (1-2)
Parameter				
Project Presentation and Demonstration (User Interface, ease of use, usability)				
Understanding individual caPRCity & involvement in the project				
Team Work (Distribution of work, intra-team				

communication and togetherness)				
Outcomes / Usability				

Contest Participation / Awards, Publications and IPR

Grade (Grade Point)	Excellent (10-9)	Very Good (6-8)	Fair (3-5)	Poor (1-2)
Parameter				
Participation in various contests				
Appreciation and Awards				
Publications				
Copyright				
Patent				
Commercial value /product conversion of Work				

Environment & Ethics (solution to problems considering)

Grade (Grade Point)	Excellent (10-9)	Very Good (6-8)	Fair (3-5)	Poor (1-2)
Parameter				
social				
safety				
environmental				
ethical				
Legal issues				

ANNEXURE I: FORMAT FOR FINAL PROPOSAL

Title Page

- Project Group ID

- Title of the project

- Domain such as Artificial Intelligence, Machine Learning, Databases, Data Mining, Image processing, WSN, Web technology   etc.

- Team Member (PRN, Roll No, Name, Role/Task assigned, email, mobile & sign)

- Sponsorship details, if any (Name, External Guide name and Designation with Signature, e- Mail ID)

- Internal Guide(with signature of approval)

- Type of Project

- Mentor(PG Student/Alumni/other)

- TE students associated with:(Roll No, Name)

Inner Pages:

- Keywords (ACM Keywords)

- Problem Definition

- Abstract

- Process Diagram, System architecture, List of modules, and functionalities

- Literature survey (Study, Current market survey: similar systems/products available, their pros and cons.

- Objectives

- Scope of the project

- Software and hardware requirements

- Expected Outcomes

- Probable date of completion

- References (This should include the list of books, magazines, research papers, web links etc. referred by the students)

ANNEXURE II: SYSTEM REQUIREMENT SPECIFICATION

Software requirement Specification is a detailed write-up indicating the requirements that the project demands. It contains actual detailed problem definition. The definition should include all that is to be done and is to be developed in the final software and / or Hardware (product) that has to be generated form the years work (User's point of view). The entries under this section are to be categorized as,

1. Necessary functions,

2. Desirable functions, and others

Requirement may not be final and provision should be available to add features dynamically without affecting the actual flow and design of the document. Modified requirements (after doing feasibility study) are to be prepared under all the 3 categories listed above form the developer's point of view. The requirements listed herein should be feasible technically form the software/ Hardware point of view.

It should include following important requirements.

1. **Detailed Problem Definition**

2. **External Interface Requirements**

   - User interfaces

   - Hardware Interfaces

   - Software Interfaces

   - Communication Interfaces

3. **System Features**

   - Feature 1

   - Feature 2 etc.

4. **Other Non- functional requirements.**

   - Performance requirements

   - Safety requirements

   - Software Quality attributes

ANNEXURE III PARTIAL PROJECT REPORT
(SEMESTER I)

A preliminary report of project work (Partial Project Report) is to be prepared as per the guideline given below using **Latex** and is to be submitted at the end of semester I.

Title Page

First page containing Name, Topic Name, Guide Name, Year, Branch, and College Name etc.

Certificate

- Certificate
- Project approval sheet
- Certificate by the sponsoring authority, if any.

Acknowledgements (if any)

Thanking any person / staff member / friend if to be done so.

Abstract

A minimum of 100 words briefing the topic in consideration.

Keywords

A minimum of 5 and maximum of 10

Introduction

Introduction includes briefing of the details to follow, details of project work, objectives, scope of the project, motivation and organization of report.

Literature Survey

The purpose of the literature survey is to identify information relevant to project work and the potential and known impact of it within the project area. This section should include a comprehensive report of current market survey done with respect to problem. Include study of similar systems available, if any along with their pros and cons. identify those areas where there is an absence or scarcity.

Design Details (Phase I to IV)

Phase I: Requirements Analysis

The Group is to submit a detailed write – up indicating the requirements that the project demands, viz.

- Actual detailed problem definition.

- The definition is to include all that is to be done and is to be put up in the final software and / or

- Hardware (product) that is to be generated from the years work (User's point of view).

Requirement may not be final and provision should be available to add features dynamically without affecting the actual flow and design of the document.

Modified Requirements (After doing feasibility study) are to be prepared under all the 3 categories listed above from the developer's point of view. The requirement listed herein should be feasible technically from the software / Hardware point of view.

Follow the standard format of SRS. Phase II: Analysis Phase

The group (based on Phase I) is to suggest the paradigm followed by them in the project. The paradigm should be justifiable from Phase I. The various stages and work to be completed under them is to be indicted in detail.

Phase III: Design Phase

ERDs (Optional, decide in consultation with guide)

- The group is to draw the ERD (Entity Relationship Diagram) for the project. (This should be justifiable with regard to Phase I & II)

- The ERD after getting evaluated (by dry running) is to be analyzed for incompleteness from any point of view.

- The ERD thus validated should be made fair in a presentable fashion.

- This ERD is to be included in the Report.

IF

The project group is to follow an "Object Oriented" Approach for their Project.

THEN

- The group should all UML (Unified Modeling Language) diagrams for the project.

- These diagrams are to be refined in every aspect for this report(as per requirements finalized in phase I)

- Proper notations are to be used in all the figures drawn.

- Proper Color-coding if required is to be used.

- Extensions to diagrams / customizations may be done and represented (if the project demands it)

ELSE (groups following Structured Approach)

- The group should draw the DFD-s (Data Flow Diagrams) for the Project. (These should be justifiable with respect to Phase I, II and the ERD)

- DFD Level 0, Level 1, Level 2 should be drawn in an evolutionary fashion (No entries to appear in Level 2 unless they are in Level 1, which in turn are in Level 0)

- The DFD's are to be validated and made final in a presentable fashion.

- Proper Color- coding is expected

- Extensions to DFD-s may be represented (if the project demands it)

Phase – IV: Planning Phase

- The group should finalize the Front End/ Back End required for the project as per the demands of the project(Software and / or hardware)

- The Front End/ Back End should be justifiable depending on the complexity of the project.

- The structure of the database should be finalized depending on the complexity of the project.

- Any Normalization required on the database is done so as to ensure correctness for the future phase.

- Coding Language / Methodology should be finalized/

- Time requirement to be finalized and indicated

- Actual project plan including major milestones should be decide and finalized

- Rough estimates of lines of code / functions / routines to be made.

- Rough estimates of lines of code / Objects / Classes to be made (for Groups following OO Paradigm)

- Software Reuse /Re – Engineering possibilities are to be expected and indicated

- Software and Hardware requirement.

- Probable date of completion.

- Scope of the project.

Phase – V: Prototyping

- A prototype is expected which basically includes all the MAJOR features in the project.

- The GUI/ Front end should be prepared.

- The structure of the database / back end (if any) to be indicated.

- The prototype is built basically to give a feel of the actual software and / or hardware (Product) that is expected

    Major routines / Functions are expected.

Conclusions

    Write conclusions drawn from the work done with atleast 50 words.

References

List out Books, Magazines, Thesis, Journals, Web links etc referred in IEEE format Plagiarism Check Report

ANNEXURE IV: FORMAT FOR PROJECT REPORT (SEMESTER II)

A report of project work has to be prepared as per the guidelines given below using Latex and should be submitted at the end of semester II along with CD containing (copy of Partial Project Report, Final Project Report along with .tex files, Power point presentation, copy of base paper and reference papers, executable Project Code, supportive software platform for the project execution).

- **First page as per standard college reports**

    First page containing Name, Topic Name, Guide Name, Year, Branch, and College Name etc. (see format displayed herewith)

- **Certificate** (will be provided by college)

    Dissertation approval sheet (see format displayed herewith) Also attach certificate certifying the project work done approved by the sponsoring authority, if any.

- **Abstract**

    A minimum of 100 words briefing the topic in consideration.

- **Keywords**

    A minimum of 5 and maximum of 10

- **Index**

    Details of various Topics, Sub-Topics, with Page No. Figure Index, giving details of page number, figure number and figure caption Table Index, giving details of page number, table number and table caption (If any) Index of Pseudo-code / Sample code (If any)

I) Introduction

Minimum of 200 words, giving some briefing of the details to follow.

- Detailed problem definition
- Justification of problem
- Need for the new system

- Advances/additions/updating the previous system

- **Aim and Objectives**

- Presently available systems for the same

- Purpose of your system

- Organization of the report

This section should be relevant to the Literature Survey done and reported in the partial project report. The purpose of the literature survey is to identify information relevant to project work and the potential and known impacts of it within the project area. This section should include a comprehensive report of current market survey done with respect to problem. Include study of similar systems available, if any along with their pros and cons. identify those areas where there is an absence or scarcity.

II) Analysis

- Project plan

- Requirement analysis

- Team structure

The Group has to submit a detailed write-up indicating the requirements that the project demands-

Actual detailed problem definition

The definition should include all that has to be done and developed in the final software and / or Hardware (product) that will be generated from the years work (User's point of view).

The entries under this section are to be categorized as-

1. Necessary functions,

2. Desirable functions,

3. Others

Requirement may not be final and provision should be available to add features dynamically without affecting the actual flow and design of the document. Modified Requirements (after doing feasibility study) are to be prepared under all the 3 categories

listed above from the developer's point of view. The requirements listed herein should be feasible technically from the Software / Hardware point of view. The new list should be categorized in the 3 categories listed above. (Follow the IEEE format of SRS)

The group is to suggest the Paradigm followed by them in the Project. The Paradigm should be justifiable from Phase I. The various stages and work to be completed under them has to be indicted in detail.

III) Design

- Software Requirement Specification (SRS) format.

- Risk assessment

    Brief discussion on Project plan submitted in semester I including major milestones and the work done as per it.

IV) Modeling

- UML diagrams (all 9)

- ERD & Normalization (NF) for database (if any)

   ERDs (Optional, decide in consultation with guide)

- The group should draw the ERD (Entity Relationship Diagram) for the Project. (This should be justifiable with regard to Phase I & II)

- The ERD after getting evaluated (by dry running) should be analyzed for incompleteness from any point of view

- The ERD thus validated should be made fair in a presentable fashion

- This ERD is to be included in the Report

   IF

   The project group is to follow an "Object Oriented "Approach for their Project.

   THEN

- The group should prepare all UML (Unified Modeling Language) diagrams for the project

- These diagrams are to be refined in every aspect for this report (as per requirements

finalized in phase I)

- Proper notations are to be used in all the figures drawn

- Proper Color-coding if required is to be used

- Extensions to diagrams / customizations may be done and represented (if the project demands it)

ELSE (groups following Structured Approach)

- The group is to draw the DFD-s (Data Flow Diagrams) for the Project. (These should be justifiable with respect to Phase I, II and the ERD)

- DFD Level 0, Level 1, Level 2 should be drawn in an evolutionary fashion (No entries to appear in Level 2 unless they are in Level 1, which in turn are in Level 0)

- The DFD-s are to be validated and made final in a presentable fashion.

- Proper notations are to be used in all the figures drawn

- Proper Color-coding is expected

- Extensions to DFD-s may be represented (if the project demands it)

V) Coding/Implementation

. Algorithms/ Flowcharts

· Software used

· Hardware specification

· Programming language

· Platform

· Components

· Tools

. Coding Style Format

VI) Test data Sets, Result and Analysis

VII) Testing

· Format technical reviews

· Test plan

· Test cases

· Test results

(Unit, integration, regression, system,α,β)

VIII) Artificial Intelligence and Data Science

Students must write one chapter on the use of AI and/or DS concepts used in the entire project implementation.

They must mention the AIDS algorithms and techniques used in the life cycle of the project.

IX) Software Quality Assurance Plan

* Costing (Time, Money and Resources)

(Do not include costing in the project report; submit to the guide)

Conclusion

Conclusions in atleast 50 words based on work done

References

List out Books, Magazines, Thesis, Journals, Web links etc referred in IEEE format

Glossary

In Keyword Alphabetical Order Ascending along with Page numbers

Plagiarism Check Report

ANNEXURE V: PROJECT REPORT FORMATTING GUIDELINES

1) **Report Size:** Limit your Project report to preferably 25- 40 pages for partial project report. Limit your Project report to preferably 80-100 pages for final project report.

2) **Footer:** The footer "Department of Artificial Intelligence and Data Science, Name of College" should be included. It should be TIMES NEW ROMAN 10 pt and centrally justified.

3) **Header:** Project Title centered and page nos. on right should be included. **Start numbering from introduction.**

4) **Paper Size:** A4 Size, bond paper.

5) **Margins: Mirrored.**

    1. **Top**   **: 1 inch**

    2. **Bottom**   **: 1 inch**

    3. **Inside :1.25 inch**

    4. **Outside**   **:1 inch**

6) **Line SPRCing:** 1. 5 lines

7) **Title of Chapter:**

    1. **Font**   **: Arial (Bold face, Capital,)**

    2. **Size**   **:16 pt, Alignment:** centered

8) **All Topics heading:**

    i.   First order Heading: (for example -**1. Introduction**)

        1. Font   : Times New Roman(Bold Face)

        2. Size   : 14 pt

    ii.   Second order Heading: (for example -**1.1 Evolution**)

        1. Font : Times New Roman(Bold Face)

        2. Size   : 12 pt

    iii.   Third order Heading: for example -1.1.1 Image Processing

           1. Font   : Times New Roman(Normal Face)

           2. Size   : 12 pt

           3.

9) Text:

      1.   Font: Times New Roman(Bold Face)

      2. Size: 12 pt

10) Figures and Tables:

      1. Caption:(for figures below the figure and for tables above the table)

      2. Font: Garamond(Bold)

      3. Size:11 pt

      4. Alignment: Center

11) References :

      1. Book

   Author name(s), Book Title, Publisher, Copyright Year, page nos. if any.

      2. Journal/ Magazine/ Periodical

    Author name(s), paper name, Journal/ Magazine/ Periodical name, issue no., page nos.

      3. Web Resources

   Complete URL including File name.

      Plagiarism Check Report

ANNEXURE VI: FORMAT FOR PROJECT REPORT
COVER PAGE/ TITLE PAGE

(Partial) Project Report On

Title of Project

by

Name of Student 1 (Seat NO:) Name of Student 2 (Seat NO:)

Under the guidance of

Name of the Guide

Logo of the college

Department of Artificial Intelligence and Data Science

NAME OF COLLEGE

SAVITRIBAI PHULE PUNE UNIVERSITY 20 -20

Format for Project Approval sheet

PROJECT APPROVAL SHEET A

Project

on

(Project Title)

Is successfully completed by Student names (Exam NO:)

at

Department of Artificial Intelligence and Data Science

NAME OF COLLEGE

Savitribai Phule Pune University

20 -20

Name   Name of Head

Project Guide   Head of Department

Department Name.

ANNEXURE VII: REPORT DOCUMENTATION

Report Documentation

Report Code: AIDS-BE-Project 20 <mark>-20</mark>   **Report Number: < >**

Report Title:

<mark>**Address (Details):**</mark>

<mark>**Name of College M.S. INDIA.**</mark>

Author 1 [with Address, phone, E- mail]:	**Author 2 [with Address, phone, E-mail]: Address**	**Author 3 [with Address, phone, E-mail]: Address**	**Author 4 [with Address, phone, E-mail]: Address**
Address			
	E-mail :	**E-mail :**	**E-mail :**
E-mail :	**Roll: <Roll Number>**	**Roll: <Roll Number> Cell No**	**Roll: <Roll Number> Cell No**
Roll: <Roll Number >	**Cell No**		

Cell No

Year: <mark>20 – 20</mark>

Branch: Artificial Intelligence and Data Science

*__Key Words__***: <Keywords in the Report>**

Type of Report: FINAL	Report Checked By:	Report Checked Date:	**Guides Complete Name:** **<Guide's Complete Name>**	Total Copies N+2

Abstract: <A Brief Abstract of the Seminar>

NOTE –

This table should not go beyond this page.

Scale down the Abstract if it does not fit in one page.

Take guide's Signature in the **"Report Checked By**:" Cell and Date of Signature in the "**Report Checked Date:**"

Cell.

This page is the last page of the projects report and is NOT to be included in the **"Page Count"**

ANNEXURE VIII: SOFTWARE ENGINEERING CODE OF ETHICS AND PROFESSIONAL PRACTICES

(Courtesy / Reference- http://www.acm.org/about/code-of-ethics)

Computers have a central and growing role in commerce, industry, government, medicine, education, entertainment and society at large. Software engineers are those who contribute by direct participation or by teaching, to the analysis, specification, design, development, certification, maintenance and testing of software systems. Because of their roles in developing software systems, software engineers have significant opportunities to do good or cause harm, to enable others to do good or cause harm, or to influence others to do good or cause harm. To ensure, as much as possible, that their efforts will be used for good, software engineers must commit themselves to making software engineering a beneficial and respected profession. In accordance with that commitment, software engineers shall adhere to the following Code of Ethics and Professional Practice.

The Code contains eight Principles related to the behavior of and decisions made by professional software engineers, including practitioners, educators, managers, supervisors and policy makers, as well as trainees and students of the profession. The Principles identify the ethically responsible relationships in which individuals, groups, and organizations participate and the primary obligations within these relationships. The Clauses of each Principle are illustrations of some of the obligations included in these relationships. These obligations are founded in the software engineer's humanity, in special care owed to people affected by the work of software engineers, and the unique elements of the practice of software engineering. The Code prescribes these as obligations of anyone claiming to be or aspiring to be a software engineer.

Software engineers shall commit themselves to making the analysis, specification, design, development, testing and maintenance of software a beneficial and respected profession. In accordance with their commitment to the health, safety and welfare of the public, software engineers shall adhere to the following Eight Principles:

1. PUBLIC - Software engineers shall act consistently with the public interest.

2. CLIENT AND EMPLOYER - Software engineers shall act in a manner that is in the best interests of their client and employer consistent with the public interest.

3. PRODUCT - Software engineers shall ensure that their products and related modifications meet the highest professional standards possible.

4. JUDGMENT - Software engineers shall maintain integrity and independence in their professional judgment.

5. MANAGEMENT - Software engineering managers and leaders shall subscribe to and promote an ethical approach to the management of software development and maintenance.

6. PROFESSION - Software engineers shall advance the integrity and reputation of the profession consistent with the public interest.

7. COLLEAGUES - Software engineers shall be fair to and supportive of their colleagues.

8. SELF - Software engineers shall participate in lifelong learning regarding the practice of their profession and shall promote an ethical approach to the practice of the profession.

Environment and Computing-

Information and communication technologies (ICTs) have been contributing to environmental problems: computers, electronic devices and ICT infrastructure consume significant amounts of electricity, placing a heavy burden on our electric grids and contributing to greenhouse gas emissions. In 2007, the total footprint of the ICT sector – including personal computers (PCs) and peripherals, telecoms networks and devices and data centers – was 830 Mt CO_2 emission, about 2% of the estimated total emissions from human activity released that year (a figure equivalent to aviation). ICT hardware poses severe environmental problems both during its production and its disposal. Each stage of a computer's life, from its production, throughout its use, and into its disposal, presents environmental problems. Manufacturing computers and their various electronic and non - electronic components consumes electricity, raw materials, chemicals, and water, and generates hazardous waste. All these directly or indirectly

increase carbon dioxide emissions and impact the environment and the trend is to increase in the BAU (Business As Usual) scenario.

Green Computing-

Hence you all our students are requested to follow green computing practices. Green computing is the study and practice of designing, manufacturing, using, and disposing of computers, servers, and associated subsystems — such as monitors, printers, storage devices, and networking and communications systems —efficiently and effectively with minimal or no imPRCt on the environment. Green computing includes the dimensions of environmental sustainability, the economics of energy efficiency, and the total cost of ownership, which includes the cost of disposal and recycling. Green computing benefits the environment by improving energy efficiency, lowering greenhouse gas emissions, using less harmful materials, and encouraging reuse and recycling. Green design, Green manufacturing, Green use, Green disposal are complementary paths of green ICT. Only focusing on these four fronts we can achieve total environmental sustainability from the IT side and make IT greener throughout its entire lifecycle.

Social Life and Computing-

Each IT professional must keep in mind the three key components of a corporate Green IT best practices policy -Environment, Economy and Social aspect. The invention of the computer has completely changed the way we live our lives. Nearly everything is controlled by a computer; cars, satellites, phones, etc. Computers have made our lives easier. Computers can also have positive effects on a person's social life when their power to connect over great distances is harnessed fully. Computers have both positive and negative impact in our society. While technology is a wonderful thing it is almost likely that it can be used in an immoral or wrong way. There is a price to pay for everything even if it appears it's making life easier on people.

While proper lifecycle management can greatly boost a IT company's ecological and environmental sustainability position, it can also contribute to achieving goals on the social front. Hardware retirement practices are the primary concern in this regard. In addition to seeking carbon neutrality, a proper asset retirement strategy should seek sustainability in the communities where companies operate.

The following social objectives should be considered:

1. To optimize sustainability in their IT infrastructure, companies should focus on each state of the IT lifecycle
2. Setting the Appropriate Corporate Sustainability Policy
3. Avoiding unethical labor practices and Controlling unethical exports
4. Accountability in the Recycling e-waste and Sustainability Metrics and Reporting
5. Greater Transparency Regarding Material Analysis and Extraction
6. Compliance with stringent, evolving security regulations

SCHEDULE FOR PROJECT

Date	Week	Milestone for the week	Remark	Guide's Signature
	1			
	2			
	3			
	4			
	5			
	6			
	7			
	8			
	9			

	10			
	11			
	12			