Vidyavardhini's College of Engineering & Technology

Department of
Computer Science and Engineering[Data Science]

Second Year Mini Project Handbook

Academic Year: 2021 - 2022
Semester: III

Name of Students: _____

_____

_____

_____

Project Guide: _____

Vidyavardhini's College of Engineering & Technology

Vision

To be a premier institution of technical education, aiming at becoming a valuable resource for industry and society.

Mission

- To provide technologically inspiring environment for learning.
- To promote creativity, innovation and professional activities.
- To inculcate ethical and moral values.
- To cater personal, professional and societal needs through quality education.

Department Vision:

To evolve as a center of excellence in the field of Computer Engineering to cater to industrial and societal needs.

Department Mission:

- To provide quality technical education with the aid of modern resources.
- Inculcate creative thinking through innovative ideas and project development.
- To encourage life-long learning, leadership skills, entrepreneurship skills with ethical & moral values.

Program Education Objectives (PEOs):

PEO1: To facilitate learners with a sound foundation in the mathematical, scientific and engineering fundamentals to accomplish professional excellence and succeed in higher studies in Computer Engineering domain

PEO2: To enable learners to use modern tools effectively to solve real-life problems in the field of Computer Engineering.

PEO3: To equip learners with extensive education necessary to understand the impact of computer technology in a global and social context.

PEO4: To inculcate professional and ethical attitude, leadership qualities, commitment to societal responsibilities and prepare the learners for life-long learning to build up a successful career in Computer Engineering.

Program Specific Outcomes (PSOs):

PSO1: Analyze problems and design applications of database, networking, security, web technology, cloud computing, machine learning using mathematical skills, and computational tools.

PSO2: Develop computer-based systems to provide solutions for organizational, societal problems by working in multidisciplinary teams and pursue a career in the IT industry.

Program Outcomes (POs):

Engineering Graduates will be able to:

- **PO1. Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- **PO2. Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **PO3. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- **PO4. Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- **PO5. Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
- **PO6. The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- **PO7. Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- **PO8. Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- **PO9. Individual and teamwork:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- **PO10. Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- **PO11. Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- **PO12. Life-long learning:** Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Table of Content

Syllabus of Mini Project 2A (Semester V)

Course Code	Course Name	Theory	Practical	Tutorial	Theory	Practical/TW	Tutorial	Total credits
CSM301	Mini-Project 1A	-	4	-	-	2	-	2

Course Code	Course Name	TW	Oral	Total
CSM301	Mini-Project 1A	25	25	50

Objectives

1. To understand and identify the problem
2. To apply basic engineering fundamentals and attempt to find solutions to the problems.
3. Identify, analyze, formulate and handle programming projects with a comprehensive and systematic approach
4. To develop communication skills and improve teamwork amongst group members and inculcate the process of self-learning and research.

Outcome: Learner will be able to...

1. Identify societal/research/innovation/entrepreneurship problems through appropriate literature surveys
2. Identify Methodology for solving above problem and apply engineering knowledge and skills to solve it
3. Validate, Verify the results using test cases/benchmark data/theoretical/ inferences/experiments/simulations
4. Analyze and evaluate the impact of solution/product/research/innovation entrepreneurship towards societal/environmental/sustainable development
5. Use standard norms of engineering practices and project management principles during project work
6. Communicate through technical report writing and oral presentation.
    - The work may result in research/white paper/ article/blog writing and publication
    - The work may result in business plan for entrepreneurship product created
    - The work may result in patent filing.
7. Gain technical competency towards participation in Competitions, Hackathons, etc.
8. Demonstrate capabilities of self-learning, leading to lifelong learning.

9 Develop interpersonal skills to work as a member of a group or as leader

Guidelines for Mini Project

1. 1 Mini project may be carried out in one or more form of following:
   Product preparations, prototype development model, fabrication of set-ups, laboratory experiment development, process modification/development, simulation, software development, integration of software (frontend-backend) and hardware, statistical data analysis, creating awareness in society/environment etc.
2. Students shall form a group of 3 to 4 students, while forming a group shall not be allowed less than three or more than four students, as it is a group activity.
3. Students should do survey and identify needs, which shall be converted into problem statement for mini project in consultation with faculty supervisor or head of department/internal committee of faculties.
4. Students shall submit an implementation plan in the form of Gantt/PERT/CPM chart, which will cover weekly activity of mini projects.
5. A logbook may be prepared by each group, wherein the group can record weekly work progress, guide/supervisor can verify and record notes/comments.
6. Faculty supervisors may give inputs to students during mini project activity; however, focus shall be on self-learning.
7. Students under the guidance of faculty supervisor shall convert the best solution into a working model using various components of their domain areas and demonstrate.
8. The solution to be validated with proper justification and report to be compiled in standard format of University of Mumbai. Software requirement specification (SRS) documents, research papers, competition certificates may be submitted as part of annexure to the report.
9. With the focus on self-learning, innovation, addressing societal/research/innovation problems and entrepreneurship quality development within the students through the Mini Projects, it is preferable that a single project of appropriate level and quality be carried out in two semesters by all the groups of the students. i.e. Mini Project 2 in semesters V and VI.
10. However, based on the individual students or group capability, with the mentor's recommendations, if the proposed Mini Project adhering to the qualitative aspects mentioned above, gets completed in odd semester, then that group can be allowed to work

on the extension of the Mini Project with suitable improvements/modifications or a completely new project idea in even semester. This policy can be adopted on a case by case basis.

Term Work

The review/ progress monitoring committee shall be constituted by the heads of departments of each institute. The progress of the mini project to be evaluated on a continuous basis, based on the SRS document submitted. minimum two reviews in each semester.

In continuous assessment focus shall also be on each individual student, assessment based on individual's contribution in group activity, their understanding and response to questions.

Distribution of Term work marks for both semesters shall be as below: Marks	25
1 Marks awarded by guide/supervisor based on logbook	10
2 Marks awarded by review committee	10
3 Quality of Project report	05

Review / progress monitoring committee may consider following points for assessment based on either one year or half year project as mentioned in general guidelines

One-year project:

1 In first semester entire theoretical solution shall be ready, including components/system selection and cost analysis. Two reviews will be conducted based on presentation given by students group.

- First shall be for finalization of problem
- Second shall be on finalization of proposed solution of problem.

2 In second semester expected work shall be procurement of components/systems, building of working prototype, testing and validation of results based on work completed in an earlier semester.

- First review is based on readiness of building working prototype to be conducted.
- Second review shall be based on poster presentation cum demonstration of working model in last month of the said semester.

Half-year project:

1 In this case in one semester students" group shall complete project in all aspects including,

- Identification of need/problem
- Proposed final solution
- Procurement of components/systems
- Building prototype and testing

2 Two reviews will be conducted for continuous assessment,

- First shall be for finalization of problem and proposed solution
- Second shall be for implementation and testing of solution.

Mini Project shall be assessed based on following points

1 Clarity of problem and quality of literature Survey for problem identification

2 Requirement Gathering via SRS/ Feasibility Study

3 Completeness of methodology implemented

4 Design, Analysis and Further Plan

5 Novelty, Originality or Innovativeness of project

6 Societal / Research impact

7 Effective use of skill set : Standard engineering practices and Project management standard

8 Contribution of an individual's as member or leader

9 Clarity in written and oral communication

10 Verification and validation of the solution/ Test Cases

11 Full functioning of working model as per stated requirements

12 Technical writing /competition/hackathon outcome being met

In one year project (sem III and IV), first semester evaluation may be based on first 10 criteria and remaining may be used for second semester evaluation of performance of students in mini projects.

In case of half year projects (completing in III sem) all criteria in generic may be considered for evaluation of performance of students in mini projects.

Guidelines for Assessment of Mini Project Practical/Oral Examination:

1 Report should be prepared as per the guidelines issued by the University of Mumbai.

2 Mini Project shall be assessed through a presentation and demonstration of working model by the student project group to a panel of Internal and External Examiners preferably from industry or research organizations having experience of more than five years approved by the head of Institution.

3 Students shall be motivated to publish a paper/participate in competition based on the work in Conferences/students competitions.

Project Group Details

Title of the Project:	
Details of Students:	Name: _____ Mobile No.: _____ E-mail id: _____
	Name: _____ Mobile No.: _____ E-mail id: _____
	Name: _____ Mobile No.: _____ E-mail id: _____
Project Guide:	
Details of Company: (For Industry Sponsored Projects)	Name of Company: _____ Contact Person: _____ Contact No.: _____ E-mail id: _____

Brief Description of the Project

Description:
Important stages:
Software/Hardware Requirements:

Attendance Record

Week No.	Date	Student 1	Student 2	Student 3	Student 4
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Presentation Attendance Record

Panel Presentation 1

Date :

Name of Student	Sign.

Panel Presentation 2

Date : _____

Name of Student	Sign.

Project Progress Report

Week No.	Task Completed
1	
2	
3	
4	
5	
6	
7	

Project Progress Report

Week No.	Task Completed
8	
9	
10	
11	
12	
13	
14	

Performance Criteria

Sr. No.	Performance Criteria	Markers
1	Initial survey	● Efforts taken to identify the project idea through proper survey
2	Progressive survey	● Efforts taken to overcome difficulties during the project progress through proper survey
3	Application of project	● Application towards societal, academic, environmental needs etc.
4	Literature survey	● Quality ● Understanding ● Analysis ● Learning new technology/methods
5	Project detailing	● Road map ● Design of system (including block diagram/ flowchart/ state diagram etc.) ● Hardware/Software selection
6	Implementation	● Project implementation ● Testing & trouble shooting ● Final integration
7	Regularity	● Regular reporting to guide/co-guide
8	Completion of work Assigned	● Timely completion of the assigned work by guide/co-guide
9	Proficiency in Hardware/Software	● Proficiency in Hardware/Software tools used in the project
10	Teamwork	● Contribution as a team member ● Co-ordination ● Leadership
11	Ethical values	● Maintaining ethical values in reporting the work done
12	Presentation 1 & 2	● Communication & presentation skills ● Understanding ● Completion ● Demonstration
13	Quality of report	● Content ● Formatting ● Referencing ● Plagiarism check

In-semester Evaluation

Name of Student	Performance Criteria	Marks	Member 1	Member 2	Member 3	Guide	Co-Guide	Average
	Initial survey	20	--	--	--			
	Progressive survey	5	--	--	--			
	Application of project	5	--	--	--			
	Literature Survey	40						
	Project Detailing	10	--	--	--			
	Implementation	20						
	Regularity	10	--	--	--			
	Completion of work assigned	10	--	--	--			
	Proficiency in Hardware/Software	10	--	--	--			
	Teamwork	5	--	--	--			
	Ethical values	5	--	--	--			
	Presentation 1	20						
	Presentation 2	20						
	Quality of report	20						
	Total Marks (Out of 200)							
	Marks Out of 25							
	Initial survey	20	--	--	--			
	Progressive survey	5	--	--	--			
	Application of project	5	--	--	--			
	Literature Survey	40						
	Project Detailing	10	--	--	--			
	Implementation	20						
	Regularity	10	--	--	--			
	Completion of work Assigned	10	--	--	--			
	Proficiency in Hardware/Software	10	--	--	--			
	Teamwork	5	--	--	--			
	Ethical values	5	--	--	--			
	Presentation 1	20						
	Presentation 2	20						
	Quality of report	20						
	Total Marks (Out of 200)							
	Marks Out of 25							

Member 1 Member 2 Member 3 Guide

In-semester Evaluation

Name of Student	Performance Criteria	Marks	Member 1	Member 2	Member 3	Guide	Co-Guide	Average
	Initial survey	20	--	--	--			
	Progressive survey	5	--	--	--			
	Application of project	5	--	--	--			
	Literature Survey	40						
	Project Detailing	10	--	--	--			
	Implementation	20						
	Regularity	10	--	--	--			
	Completion of work assigned	10	--	--	--			
	Proficiency in Hardware/Software	10	--	--	--			
	Teamwork	5	--	--	--			
	Ethical values	5	--	--	--			
	Presentation 1	20						
	Presentation 2	20						
	Quality of report	20						
	Total Marks (Out of 200)							
	Marks Out of 25							
	Initial survey	20	--	--	--			
	Progressive survey	5	--	--	--			
	Application of project	5	--	--	--			
	Literature Survey	40						
	Project Detailing	10	--	--	--			
	Implementation	20						
	Regularity	10	--	--	--			
	Completion of work Assigned	10	--	--	--			
	Proficiency in Hardware/Software	10	--	--	--			
	Teamwork	5	--	--	--			
	Ethical values	5	--	--	--			
	Presentation 1	20						
	Presentation 2	20						
	Quality of report	20						
	Total Marks (Out of 200)							
	Marks Out of 25							

Member 1 Member 2 Member 3 Guide