Project Based Learning Log-Book

Second Year Electrical Engineering

Academic Year: 2022–2023

Group/Project ID: (ELECT/2022-23/)
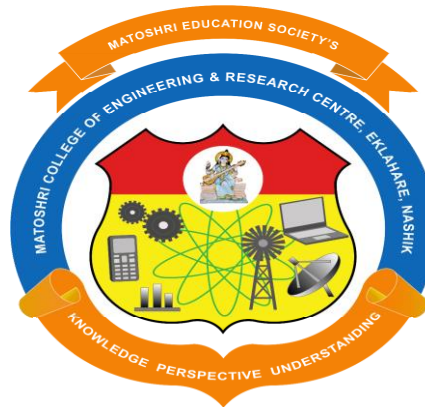
Group Members:

1. --------------------------------------
2. --------------------------------------
3. --------------------------------------
4. --------------------------------------
5. --------------------------------------

Project Title :   ---

Project Guide: --

Department of Electrical Engineering
Matoshri Education Society's

Matoshri College of Engineering and Research Centre, Nashik,
Eklahare, Near Odhagaon, Aurangabad Road, Nashik

Affiliated to Savitribai Phule Pune University, Pune

General Instructions

1. Students should enter the correct information in the log-book.

2. Get all entries verified by respective group's guide. No changes are to be made without project guide's permission.

3. Students should report to their respective guide as per the schedule and its log is to be maintained in the log-book.

4. Follow all deadlines and submit all documents strictly as per prescribed formats.

5. The log-book should be produced at the time of all discussions, presentations and examinations.

6. The log-book must be submitted to Project Based Learning coordinator/ guide/ department/ collegeafter successful examination at the end of the semester.

7. All documents and reports are to be prepared in MS-Word.

8. Submit hard as well as soft copy of the report & maintain one copy with each member.

This booklet is supportive document to rules and a regulation provided by affiliated university curriculum providing recommendations, guidelines and is record of all related activities associated with project. This booklet is provided with the genuine intent to bring uniformity and to systematize the project work and to keep the audit of the activity performed by group members.

Log-Book Development Member

PBL Institution	Department of Electrical Engineering Matoshri College of Engineering and Research Centre, Nashik
Concept and Design	Prof. Dr. S. S. Khule Head of Department (Electrical Engineering) Matoshri College of Engineering and Research Centre, Nashik
Technical Committee Members	1. Dr. Rakesh G.Shriwastva 2. Mr. Vivek R. Aranke 3. Mr. Anil. Jagtap
PBL Co-ordinator	Mr. D. R. Bhise Assistant Professor, Matoshri College of Engineering and Research Centre, Nashik

Savitribai Phule Pune University, Pune
Electrical Engineering

Program Educational Objectives (PEO'S)

PEO1. To provide students with strong fundamentals of basic sciences and domain knowledge of Electrical Engineering.

PEO2. To develop multidisciplinary approach and leadership skills those augment their professional competency.

PEO3. To inculcate professionalism, ethics, communication and teamwork skills in students.

PEO4. To enable students to design and analyze systems, and develop solutions for the real-life problems.

PEO5. To motivate the students for continuous improvement in the area of interest including education as well as industry.

Program Specific Outcomes (PSOs)

PSO1. Develop models, analyze and assess the performance of different types of generation, transmission, distribution and protection mechanisms in power systems.

PSO2. Design, develop, analyze and test electrical and electronic systems; deploy control strategies for power electronics related applications.

Program Outcomes

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 Team Work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multi-disciplinary 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 multi-disciplinary 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

1. About PBL-II Work

        Currently, engineering education is undergoing significant structural changes worldwide. The rapidly evolving technological landscape forces educators to constantly reassess the content of engineering curricula in the context of emerging fields and with a multidisciplinary focus. In this process, it is necessary to devise, implement and evaluate innovative pedagogical approaches for the incorporation of these novel subjects into the educational programs without compromising the cultivation of the traditional skills. In this context, the educational community is showing rapidly rising interest in project-based learning approaches.

        The mainstream engineering education follows traditional classroom teaching, in which the major focus is mainly on the lecture and the student has very little (if any) choice on the learning process. However rapid development in engineering and technology requires adopting a teaching approach that would assist students not only in developing a core set of industry relevant skills, but also enable them to adapt to changes in their professional career.

A .Objectives and Outcomes

Objectives:

1. Impart technical knowledge and skills, and develop deeper understanding to integrate Knowledge and skills from various areas.
2. Build critical thinking, problem-solving, communication, collaboration and creativity, and Innovation amongst students.
3. Make students aware of their own academic, personal, and social developments.
4. Develop habits of self-evaluation and self-criticism, against self-competency and trying to see beyond own ideas and knowledge

Outcomes:

        On completion of the course, learner will be able to:

1. Identify, formulate, and analyze the simple project problem.
2. Apply knowledge of mathematics, basic sciences, and electrical engineering fundamentals to develop solutions for the project.
3. Learn to work in teams, and to plan and carry out different tasks that are required during a Project.
4. Understand their own and their team-mate's strengths and skills.
5. Draw information from a variety of sources and be able to filter and summarize the relevant points.
6. Communicate to different audiences in oral, visual, and written forms.

2. Guidelines for Selection of PBL Project:

Group Structure

Working in supervisor/ mentor–monitored groups. The students plan, manage and complete a task/project/activity which addresses the stated problem.

1. Create groups of 5 (five) to 6 (six) students in each class.

2. A supervisor/mentor teacher is assigned to 3-4 groups or one batch.

Project Selection

A group of 4-5 students will be assigned to a faculty member called a mentor. Based on the engineering knowledge of a group and societal and industry problems, the mentor has to guide a group to identify project problems and plan the work schedule. Here, the expected outcomes of the project must be noted. The complete work-plan should be divided in the form of the individual tasks to be accomplished with targets. Weekly review of the completed task should be taken and further guidelines are to be given to a group. The final activity will be presenting the work completed and submitting the report. A group should be promoted to participate in a competition or write a paper.

A problem need s to refer back to a particularly practical, scientific, social, and 'or technical domain. The problem should stand us one specified example or manifestation of more general learning outcomes related to knowledge and/or modes of inquiry. There are no commonly shared criteria for what constitutes an acceptable project. Projects vary greatly in the depth of the questions explored, the clarity of the learning goals, the content, and the structure of the activity.

It may have

- ➢ A few hands-on activities that may or may not be multidisciplinary.
- ➢ Use of technology in meaningful ways to help them investigate, collaborate, analyze, synthesize, and present their learning.
- ➢ Activities on solving real-life problems, investigation /study, and writing reports of in-depth study, fieldwork.

Effective Documentation

In order to make our engineering graduates capable of preparing effective documentation, it is required for the students to learn the effective writing skills. The PBL final report is expected to consist of the Literature Survey, Problem Statement, Aim and Objectives, System Block Diagram, System Implementation Details, Discussion and Analysis of Results, Conclusion, System Limitations and Future Scope. Many freely available software tools (for instance Mendley (Elsevier), Grammarly) are expected to be used during the preparation of PBL synopsis and final report. It is expected that the PBL guides/mentors shall teach students about utilizing valid sources of information (such as reference papers, books, magazines, etc) related to their PBL topic.

Assessment

The department/mentor is committed to assess and evaluate both students' performance and Course effectiveness. The progress of PBL is monitored regularly every week. During the process of monitoring, continuous assessment and evaluation the individual and team performances are to| be measured by supervisor /mentor and authorities.

Students must maintain an institutional culture of authentic collaboration, self-motivation Peer-learning, and personal responsibility. 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 the assessment and evaluation processes. Groups may demonstrate their knowledge and skills by developing a solution to the problem, public product, and/or report and/or presentation.

➢ Individual assessment for each student (Understanding individual capacity, role, and| involvement in the project)

➢ Group assessment (roles defined, distribution of work, intra-team communication and togetherness)

➢ Documentation and presentation.

Evaluation & Continuous Assessment

The institution/head shall be committed to ensuring the effective and rigorous implementation of the idea of project based learning. Progress of PBL shall be monitored regularly on a weekly basis. Weekly review of the work shall be necessary. During the process of monitoring and continuous assessment and evaluation the individual and team performance is to be measured. PBL is monitored and continuous assessment is done by supervisor /mentor and authorities. Students must maintain an institutional

culture of authentic collaboration, self-motivation, peer-learning and personal responsibility. 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.

The effectiveness of the concept PBL lies in rigorous and continuous assessment and evaluation of the student performance. It is recommended that all activities are required to be recorded regularly. A regular assessment of PBL work is required to be maintained at the department in PBL log book by students. It is expected that the PBL log book must include following:

1. Information of students and guide.

2. Weekly monitoring by the PBL guide.

3. Assessment sheet for PBL work review by PBL guide and PBL Evaluation Committee (PEC).

The PEC structure shall consist of Head of the department, 1/2 senior faculties of the department and one industry expert (optional). Continuous Assessment Sheet (CAS) is to be maintained by the department.

Recommended parameters for assessment, evaluation and weightage are as follows
- Idea Inception **(5%).**
- Outcomes of PBL Problem Solving Skills/ Solution provided/ Final product **(50%)**
  (Individual assessment and team assessment)
- Documentation (Gathering requirements, design and modeling, implementation/execution, use of technology and final report, other documents) **(25%)**
- Demonstration (Presentation, User Interface, Usability, etc.) **(10%)**
- Contest Participation/ publication **(5%)**
- Awareness /Consideration of -Environment/ Social /Ethics/ Safety measures/Legal aspects **(5%)**
  PBL workbook will serve the purpose and facilitate the job of students, mentors, and project
  Coordinator. This workbook will reflect accountability, punctuality, technical writing ability and work
  flow of the work undertaken.

1. Outcome (physical model/prototype/ virtual model/ product development/ assembly & disassembly and analysis of standard mechanism or system, design and development of small applications using Arduino, design of control systems, development of various systems/ subsystems electrical application development and similar activities/ System performance and analysis) **(40%)**

2. Participation in various competitions/ publication/ copyright/ patent. **(10%)**

3. PBL-II Report Structure:-

Contents

- ❖ Nomenclatures
- ❖ List of Figures
- ❖ List of Graphs
- ❖ List of Tables
- ❖ Abstract

1. Introduction and aims/motivation and objectives

2. Literature Survey

3. Problem Statement

4. Project Requirements

5. Analysis and Proposed design of the project

6. Verification/ Validation

7. System Limitation & Future Scope

8. Conclusion

- • Reference
- • Appendices

   A.   Base Paper(s)

   B.   Plagiarism Report from any open source

The project report contains the details.

       I.   Cover page and Front page as per the specimen on separate sheet

      II.   Certificate from the Institute as per the specimen on separate sheet

    III.   Acknowledgements

    IV.   List of Figures

     V.   List of Tables

    VI.   Nomenclature

   VII.   Contents

Abstract (A brief abstract of the report not more than 150 words. The heading of abstract i.e. word —Abstract‖ should be bold, Times New Roman, 12 pt and should be typed at the centre. The contents of abstract should be typed on new line without space between heading and contents. Try to include one or two sentences each on motive, method, key-results and conclusions in Abstract.

1 Introduction (2-3 pages) (TNR – 14 Bold)
- Problem statement (TNR – 12)
- Objectives
- Scope
- Methodology
- Organization of Project

2 Literature Review **(05-10 pages)** Discuss the work done so far by researchers in the domainarea and their significant conclusions. No derivations, figures, tables, graphs are expected.

3 This chapter shall be based on your own simulation work (Analytical/ Numerical/FEM/CFD) **(05- 10 pages)**

4 Experimental Validation - This chapter shall be based on your own experimental work **(05-10 pages)**

5 Concluding Remarks and Scope for the Future Work **(1-2 pages)**

References

ANNEXURE (if any) (Put all mathematical derivations, Simulation program as Annexure)
   a. Tools used
   b. Papers published/certificates

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

4.   Undertaking by Students:-

Matoshri College of Engineering and Research Centre, Nashik

UNDERTAKING BY STUDENT

We, the students of S.E. Electrical hereby assure that we will follow all the rules and

regulations related to PBL-II activity for the academic year 202 -202

The Project entitled-

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.

Name of the student   **Signature**

1._____   _____

2._____   _____

3._____   _____

4._____   _____

5. Instructions Regarding Project Proposal and Finalization:-

1. The project work may involve the designing a model or upgrading an existing Electrical/electronics system. The design is to be implemented into a working model.

2. A project report including all necessary documents such as Requirement Analysis, Design specifications, Project Plan, Design Modeling, test plan, results etc.

3. The project will be undertaken preferably by a group of at least 5 students who will jointly work and implement the project. The group will select a project with approval of Project coordinator, team of teachers & the guide.

4. The idea for your project may be a proposal from a member of faculty or some industry expert or your own, or perhaps a combination of the you and faculty.

5. Every group may come up with sponsored project. Sponsorship may not be in terms of money or resources. It might be in terms of just suggesting problem definition and associated guidance.

6. Students may collect the letter required for applying the Institute/Industries for the project sponsorship from project coordinator

7. List of suggested projects, prominent domains and respective staff, whom you may contact for guidance, is displayed on the notice board. Students may contact respective staff along with synopsis for the guidance. Students may contact respective staff for projects suggested by them in the respective areas.

8. Meet PBL-II Coordinator for project title registration. For project title registration, every group must submit synopsis approved by all the staff in the respective area.

9. Synopsis must include project title, group members, sponsor details (if any), detailed problem definition, area, 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 & conditions and respective document certifying the same from authorities.

10. A PEC formed by the department will approve the project group and project work title only after complete detailed verification.

6. <u>Copy of Proposal / Synopsis as per format</u>

Project Title:-

_____

_____

_____

Project Guide: - _____

Synopsis:-

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Reference Paper (Base Paper):-

_____

_____

_____

_____

Signature of Guide: - _____

7. PBL-II Evaluation Report

Sr. No.	Name of Students	I	II	III	IV	V	VI	Total
		5 %	50%	25%	10%	5 %	5 %	100 %
		2 M	25 M	12 M	7 M	2 M	2 M	50 M
1								
2								
3								
4								
5								

1. Idea Inception **(5%).**
2. Outcomes of PBL Problem Solving Skills/ Solution provided/ Final product **(50%)** (Individual assessment and team assessment)
3. Documentation (Gathering requirements, design and modeling, implementation/execution, use of technology and final report, other documents) **(25%)**
4. Demonstration (Presentation, User Interface, Usability, etc.) **(10%)**
5. Contest Participation/ publication **(5%)**
6. Awareness /Consideration of -Environment/ Social /Ethics/ Safety measures/Legal aspects **(5%)**

Internal Guide
(Name & Sign with Date)

    PBL Evaluation
Committee/Expert (PEC):
(Name & Sign with Date)

1. _____

2. _____

Annexure i: PBL-II Report Cover page/ Title page

Savitribai Phule Pune University, Pune

A

PROJECT BASED LEARNING PROJECT REPORT ON

"Title of the Project"

SUBMITTED BY

1. Name of the student
2. Name of the student
3. Name of the student
4. Name of the student
5. Name of the student

UNDER THE GUIDANCE OF

Prof.
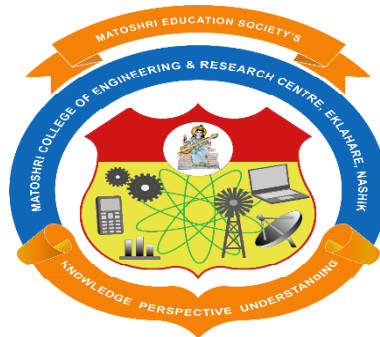
Department of Electrical Engineering
Matoshri College of Engineering and Research Centre, Nashik.
Academic Year: 2022-23
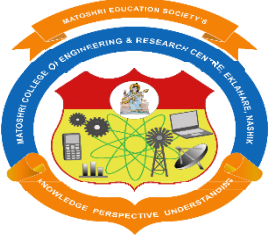
Matoshri College of Engineering and Research Centre, Eklahare, Nashik.

Department of Electrical Engineering
Academic Year: 2022 -2023

CERTIFICATE

This is to certify that the PBL-II report entitled "**Title of the project**" has successfully completed by the students of Second year Electrical Engineering.

Name of Students	PRN No.
1.	
2.	
3	
4.	
5.	

In the Partial Fulfillment of the Requirement of Second year Engineering Course in Electrical Engineering and submitted to the Electrical Engineering Department of Matoshri College of Engineering and Research Centre, Nashik, in the Academic Year 2022 -2023.

(PBL Project Guide)

Dr. S.S. Khule   Dr. G.K. Kharate
(Head of Department)   **(Principal)**

Annexure iii: PBL-II Project Registration Form

<div align="center">

Matoshri Education Society's

Matoshri College of Engineering and Research Center, Eklahare, Nashik.

Electrical Engineering Department

</div>

Date: /   / 23

To,

The Head of the Department

<div align="center">

Subject: Enrollment of Topic for the PBL-II Project

</div>

1) Title:

_____

_____

2) Details:

_____

_____

_____

_____

_____

_____

3) Details of Industry Guide (If Any):

   Name:-

   Contact no.:-

   Designation:-

Name of the Student	Roll No:	Signature of the Student.
1.		
2.		
3.		
4		
5..		

	Mr. D.R.Bhise	Dr. S.S. Khule
Internal Guide	**PBL Coordinator**	**Head of Dept.**

Continuous Assessment Sheet

Title of PBL-II Project: _____

_____

_____

Sr. No.	Date	Issues Discussed/ Work Done	Sign of Internal Guide