

PBL-II Log-Book

Second Year Mechanical Engineering

Year: 202 - 202

Group/Project ID:

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Group Members:

1.
2.
3.
4.
5.

Project Title :

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Project Guide:

.....



Department of Mechanical Engineering

Matoshri Education Society's

Matoshri College of Engineering and Research Centre, Nashik,

Eklahare, Near Odhagaon, Aurangabad Road, Nashik

Affiliated to Savitribal 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 coordinator/ guide/ department/ college after 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 Project

PBL Institution	Department of Mechanical Engineering Matoshri College of Engineering and Research Centre, Nashik
Concept and Design	Prof. Dr. J. H. Bhangale Head of Department (Mechanical Engineering) Matoshri College of Engineering and Research Centre, Nashik
PBL Co-ordinator	Mr. Vikas S. Panwar Assistant Professor, Matoshri College of Engineering and Research Centre, Nashik

Savitribai Phule Pune University, Pune
Mechanical Engineering

Program Educational Objectives

- PEO1. To prepare graduates having strong fundamentals of basic sciences and domain knowledge of Mechanical engineering to provide technical solutions for engineering problems.
- PEO2. To prepare the committed and motivated graduate with research attitude, lifelong learning, investigative approach, and multidisciplinary thinking.
- PEO3. To prepare the graduate to work as a committed professional with strong professional ethics, sound managerial and communication skills who can work effectively as an individual or in team.
- PEO4. To prepare graduates with an academic environment to become expert in Mechanical Engineering to analyze, synthesize, design and create new product/system.
- PEO5. To motivate the students for continuous improvement in area of interest including education as well as industry.

Program Outcomes

- P1: Ability to apply Knowledge of mathematics, sciences, engineering fundamentals and domain knowledge to solve complex Mechanical engineering problems.
- P2: Ability to identify, analyze and formulate the complex Mechanical engineering problems with research attitude.
- P3: Ability to design and develop the Mechanical system or process considering societal, environmental, cultural and public health issues leading to effective solutions.
- P4: Ability to develop an investigative approach to provide valid conclusions based on experimental results or statistical information
- P5: Ability to Create, select and apply appropriate techniques, resources, and modern engineering and IT tools
- P6: Ability to understand the legal, societal issues and its consequent responsibilities relevant to professional engineering practices.
- P7: Ability to understand the impact of the professional engineering solutions in societal and environmental contexts and develop eco-friendly sustainable solutions.
- P8: Ability to understand professional ethics and responsibilities as a Mechanical Engineer.
- P9: Ability to work effectively as individual and in a team as a member or leader
- P10: Ability to accomplish effective communication viz written, verbal and presentation at various fronts
- P11: Ability to apply the principles of Mechanical Engineering and management for development of multidisciplinary projects, its finance and management as individual or team
- P12: Ability to develop lifelong learning attitude.

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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. To emphasize project based learning activities that are long-term, interdisciplinary and student centric.
2. To inculcate independent and group learning by solving real world problems with the help of available resources.
3. To be able to develop applications based on the fundamentals of mechanical engineering by possibly applying previously acquired knowledge.
4. To get practical experience in all steps in the life cycle of the development of mechanical systems: specification, design, implementation, and testing.
5. To be able to select and utilize appropriate concepts of mechanical engineering to design and analyze selected mechanical system.

Outcomes:

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

- CO1. IDENTIFY the real-world problem (possibly of interdisciplinary nature) through a rigorous literature survey and formulate / set relevant aims and objectives.
- CO2. ANALYZE the results and arrive at valid conclusions.
- CO3. PROPOSE a suitable solution based on the fundamentals of mechanical engineering by possibly integration of previously acquired knowledge.
- CO4. CONTRIBUTE to society through proposed solutions by strictly following professional ethics and safety measures.

CO5. USE of technology in proposed work and demonstrate learning in oral and written form.

CO6. DEVELOP ability to work as an individual and as a team member

2. Guidelines for Selection of PBL-II 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

The project can be selected by undertaking a survey of journal papers, patents or field visit (A problem can be theoretical, practical, social, technical, symbolic, cultural and/or scientific). The problem shall consist of following facets: feasibility of arriving at a solution, analyzing the problem, design and development of the system (hardware or virtual).

There are no commonly shared criteria/ guidelines 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 structure of the activity undertaken.

Solution to problem-based projects through “learning by doing” is recommended. The model begins with the identifying of a problem, often growing out of a question or “wondering”. This formulated problem then stands as the starting point for learning. A problem can be theoretical, practical, social, technical, symbolic, cultural and/or scientific and grows out of students’ wandering within different disciplines and professional environments. As stated in the preamble as the world has adapted and propagated multidisciplinary approach, hence the proposed project activity preferably should not be restricted to only mechanical domain specific projects rather should be Interdisciplinary in nature. However the chosen problem should be integration of other streams of engineering with Mechanical engineering.

Although in a genuine case 100% software/ virtual project topic may be allowed.

Ethical Practices, teamwork and project management:

Use Indian standards or any relevant standards for project manufacturing, respect the time of others, attend the reviews, poster presentation and model exhibitions, strictly follow the deadline of project completion, comply with all legislation requirements that govern workplace health and safety practices.

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.

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

1. Idea Inception (kind of survey). **(10%)**
2. Documentation (Gathering requirements, design & modeling, implementation/execution, use of technology and final report, other documents). **(15%)**
3. Attended reviews, poster presentation and model exhibition. **(10%)**
4. Demonstration (Poster Presentation, Model Exhibition etc). **(10%)**
5. Awareness /Consideration of - Environment/ Social /Ethics/ Safety measures/Legal aspects. **(5%)**

6. 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 of BAJA/ SUPRA/ Robots/ GoKart/ Sunrisers/ Hackathon/ application development and similar activities/ System performance and analysis) **(40%)**
7. 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 domain area 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. Mechanical 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. _____

5. Instructions Regarding Project Proposal and Finalization:-

1. The project work may involve the designing a model or upgrading an existing mechanical/manufacturing 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.

7. PBL-II Evaluation Report

Sr. No.	Name of Students	I	II	III	IV	V	VI	VII	Total
		10	15	10	10	5	40	10	100

- I- Idea Inception.
- II- Documentation
- III- Attended reviews, poster presentation and model exhibition.
- IV- Demonstration
- V- Awareness /Consideration of - Environment/ Social /Ethics/ Safety measures/Legal aspects.
- VI- Outcome
- VII- Participation in various competitions/ publication/ copyright/ patent.

Internal Guide

(Name & Sign with Date)

PBL Evaluation Committee (PEC):

(Name & Sign with Date)

1. _____

2. _____

3. _____



Savitribai Phule Pune University, Pune

A

PBL-II PROJECT REPORT ON

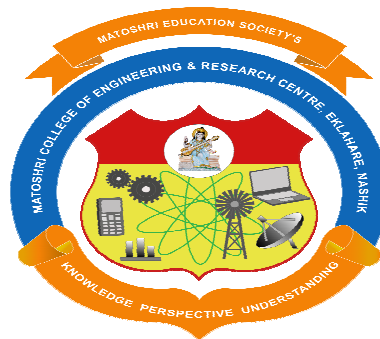
“Title of the Project”

SUBMITTED BY

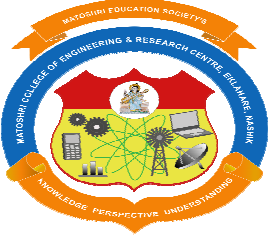
1. Name of the student
2. Name of the student
3. Name of the student
4. Name of the student
5. Name of the student

UNDER THE GUIDANCE OF

Prof.



**Department of Mechanical Engineering
Matoshri College of Engineering and Research Centre, Nashik.
Academic Year: 202 -2**



**Matoshri College of Engineering and Research Centre,
Eklahare, Nashik.**

**Department Of Mechanical Engineering
Academic Year: 202 -202**

CERTIFICATE

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

Name of Students

PRN No.

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

In the Partial Fulfillment of the Requirement of Second year Engineering Course in Mechanical Engineering and submitted to the Mechanical Engineering Department of Matoshri College of Engineering and Research Centre, Nashik, in the Academic Year 202 -202 .

(PBL-II Project Guide)

**Dr. J.H. Bhangale
(Head of Department)**

**Dr. G.K. Kharate
(Principal)**

Annexure iii: PBL-II Project Registration form

Matoshri Education Society's
Matoshri College of Engineering and Research Center, Eklahare, Nashik.
Mechanical Engineering Department

Date: / / 20

To,
The Head of the Department

Subject: Enrollment of Topic for the PBL-II Project

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..

Internal Guide

Mr. V.S.Panwar
PBL-II Co-ordinator

Dr. J.H. Bhangale
Head Mech.Dept.

