Project Based Learning – II

Course Code : 210258

(2019 Course)

Second Year Engineering

Year 2022 - 2023 Semester 2

Group ID   :

Team Members   : 1)

                      2)

                      3)

                      4)

                      5)

Project Title   :

Name of the Mentor   :

DPU

Dr. D. Y. Patil Institute of Technology,
Pimpri, Pune-411018

Department of Computer Engineering

CERTIFICATE

This is to certify that Mr./ Ms. _____

Group No._____Division_____Branch **Department of Computer Engineering**

has successfully completed the work associated with **Project Based Learning II (210258)** titled

as _____

and has submitted the work book associated under my supervision, in the partial fulfillment of

Second Year Bachelor of Engineering (Choice Based Credit System) (2019 course) of Savitribai

Phule Pune University.

Date:

Place:

| **Mentor** | **HOD** | **Principal** |
| **Mrs. Rucha Madali** | **(Name & Sign)** | **(Name & Sign)** |

Preamble

For better learning experience, along with traditional classroom teaching and laboratory learning; project-based learning has been introduced with an objective to motivate students to learn by working in group cooperatively to solve a problem, Project-based Learning (PBL) is a student centric pedagogy that involves a dynamic classroom approach in which it is believed that students acquire a deeper knowledge through active exploration of real-world challenges and problems. Students learn about a subject by working for an extended period of time to investigate and respond to a complex question, challenge or a problem. It is a style of active learning and inquiry-based learning. (Reference: Wikipedia). Problem based learning will also redefine the role of teacher as mentor in learning process. Along with communicating knowledge to students, often in a lecture setting, the teacher will also to act as an initiator and facilitator in the collaborative process of knowledge transfer and development.

This is a recommended workbook for PBL that will serve the purpose and facilitate the job of students, mentor and coordinator. This workbook will reflect accountability, punctuality, technical writing ability and work flow of the work undertaken.

Table of Contents

1. Project Based Learning Syllabus

Course Objectives:
- To develop critical thinking and problem solving ability by exploring and proposing solutions to realistic/social problem.
- To Evaluate alternative approaches, and justify the use of selected tools and methods.
- To emphasizes learning activities that are long-term, inter-disciplinary and student-centric.
- To engages students in rich and authentic learning experiences.
- To provide every student the opportunity to get involved either individually or as a group so as to develop team skills and learn professionalism.
- To develop an ecosystem that promotes entrepreneurship and research culture among the students.

Course Outcomes:

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

CO1: Identify the real life problem from societal need point of view

CO2: Choose and compare alternative approaches to select most feasible one

CO3: Analyze and synthesize the identified problem from technological perspective

CO4: Design the reliable and scalable solution to meet challenges

CO5: Evaluate the solution based on the criteria specified

CO6: Inculcate long life learning attitude towards the societal problems.

Group Structure:

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

1. There should be team/group of 4-5 students
2. A supervisor/mentor teacher assigned to individual groups.

Selection of Project/Problem:

The problem-based project oriented model for learning is recommended. The model begins with the identifying of a problem, often growing out of a question of "wondering". This formulated problem then stands as the starting point for learning. Students design and analyze the problem/project within an articulated interdisciplinary or subject frame. A problem can be theoretical, practical, social, technical, symbolic, cultural, and/or scientific and grow out of students wondering within different disciplines and professional environments. A chosen problem has to be exemplary. The problem may involve an interdisciplinary approach in both the analysis and solving phases.

By exemplarity, a problem needs to refer back to a particular practical, scientific, social and/or technical domain. The problem should stand as one specific 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 structure of the activity. A few hands-on activities that may or may not be multidisciplinary. Use of technology in meaningful ways to help them investigate, collaborate, analyse, synthesize, and present their learning. Activities may include- Solving real life problem, investigation, /study and Writing reports of in depth study, field work.

Assessment:

The institution/head/mentor is committed to assessing and evaluating both student performance and program effectiveness. Progress of PBL is monitored regularly on weekly basis. Weekly review of the work is necessary. During process of monitoring and continuous assessment and evaluation of the individual and the 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.

Group may demonstrate their knowledge and skills by developing a public product and/or report and/or presentation.

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

Evaluation and Continuous Assessment:

It is recommended that all activities should to be recorded regularly, regular assessment of work need to be done and proper documents need to be maintained at college end by both students as well as mentor (PBL work book). Continuous Assessment Sheet (CAS) is to be maintained by all mentors/department and institutes.

Recommended parameters for assessment/evaluation and weightage:

1. Idea Inception and Awareness /Consideration of -Environment/ Social /Ethics/ Safety measures/Legal aspects (10%)
2. Outcomes of PBL/ Problem Solving Skills/ Solution provided/ Final product (Individual assessment and team assessment) (40%)
3. Documentation (Gathering requirements, design and modelling, implementation/execution, use of technology and final report, other documents) (15%)
4. Demonstration (Presentation, User Interface, Usability) (20%)
5. Contest Participation/ publication (15%)

   PBL workbook will serve the purpose and facilitate the job of students, mentor and project coordinator. It will reflect accountability, punctuality, technical writing ability and work flow of the work undertaken.

Note :

- While planning for the assessment, choose a valid method based on your context. It should be able to understand by both the students as well as the faculty.
- The student group must follow the principles of Software Engineering (Scoping out the problem, the solution implementation and related documentation).
- Researching the problem and outlining various approaches is key here and should be emphasized by the tutor and the mentor.
- Aspects of design thinking (from the point of view of the person facing the problem) are very important. Students should not jump into the technology aspects first.
- The team can follow the principles of Agile Software Development. The weekly meetings could be used as a Scrum meeting.
- The tutor and mentor should actively help the students to scope the work and the approach. They must validate the technology choices.
- If the implementation code is well documented, the project can be continued by subsequent batch which will help solve a bigger problem.

Text Books:

1. A new model of problem based learning. By Terry Barrett. All Ireland Society for higher education (AISHE). ISBN:978-0-9935254-6-9; 2017
2. Problem Based Learning. By Mahnazmoallem, woei hung and Nada Dabbagh, Wiley Publishers. 2019.
3. Stem Project based learning and integrated science, Technology, Engineering and mathematics approach. By Robert Capraro, Mary Margaret Caprar

Reference Books:

1. De Graaff E, Kolmos A., red.: Management of change: Implementation of problem-based and project-based learning in engineering. Rotterdam: Sense Publishers. 2007.
2. Gopalan," Project Management core text book", 2 Indian Edition
3. James Shore and Shane Warden, " The Art of Agile Development"

2. Recommended guidelines and phrases

PBL is learning through activity. One of the teachers can be appointed as coordinator for PBL. Following are the recommended guidelines that will work as an initiator and facilitator in process of completion of PBL.

1. In first week of commencement of 2nd semester or preferably at the end of first semester let the coordinator create awareness about PBL(what, why, and how) among the students. Convey students expected outcomes, assessment process and evaluation criteria.

2. Get groups of students registered preferably 4-6 students per group.

3. Assign mentor to each group.

4. Provide guidelines for title identification (Problem can be some real life situation that needs technology solutions. This situation can be identified by meeting people around, visiting various industries, society, and institutes. The solution can be prototype, model, convertible solutions, survey and analysis, simulation, and similar).

5. Let students submit the problem identified in prescribed format(Title, Problem statement, details of a problem undertaken, and what is need of solution to the problem)

6. Coordinator and mentor can approve the problem statements based on feasibility and learning outcomes expected for first year engineering students

7. Mentor is to monitor progress of the task during phases of project work. Broadly phases may include- requirements gathering, preparing a solution, technology design for the solution. (optional phases- implementation and testing)

8. Weekly monitoring and continuous assessment record is to be maintained by mentor.

9. Get the report submitted at the end of semester.

3. Evaluation and Assessment Sheet (To be filled by the Mentor/Supervisor)

Sr. No.	Details	Max.Marks	Marks Obtained
1	Problem Identification (Idea Inception)	10	
2	Problem Analysis (Requirement Gathering)	15	
3	Proposed Solution Model/Design/ Process / prototype	20	
4	Technology Solution Model	15	
5	Expected Outcomes	5	
6	Implementation and Testing	10	
7	Regularity (Attendance + Weekly Progress Reporting)	10	
8	Awareness /Consideration of - Environment/ Social /Ethics/ Safety measures/Legal aspects	5	
9	Contest Participation/ publication Report	5	
10	Report	5	
Total		**100**	

Date   :

Mentor Name   :

Signature.   :

4. Project Information Sheet

Project ID	:	
Title	:	
Problem Statement	:	
Name of Mentor	:	

Group Members			
Roll No.	Name	Mobile Number	Email ID

5. Continuous Assessment and Remarks Sheet (To be filled by mentor)

Problem Identification (Idea Inception)
Problem Analysis (Requirement Gathering)
Proposed Solution Model/Design/ Process / prototype
Technology Solution Model
Expected Outcomes

Implementation and Testing

Regularity (Attendance + Weekly Progress Reporting)

Awareness /Consideration of - Environment/ Social /Ethics/ Safety measures/Legal aspects

Contest Participation/ publication Report

Report

6. Project Monitoring/ Progress Information Sheets (one sheet per week)

Week no. :	Date From :	Date To :

Current Work phase of project :

Discussions Held :

Progress till Date :

Remark :

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Sign of Mentor

Week no. :	Date From :	Date To :

Current Work phase of project :

Discussions Held :

Progress till Date :

Remark :

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Sign of Mentor

Week no. :	Date From :	Date To :

Current Work phase of project :

Discussions Held :

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Sign of Mentor