Savitribai Phule Pune University

Board of Studies - Mechanical and Automobile Engineering

Undergraduate Program – Final Year Automation and Robotics (2019 pattern)

402547: Project (Stage I)					
Teaching Scheme		**Credits**		**Examination Scheme**	
Practical	4 Hrs/Week	**Practical**	2	**Term Work**	50 Marks
				Oral	50 Marks

Prerequisites: Project Based Learning, Internship/Mini Project, Laboratory works, Skill Development, Audit Courses, Industrial Visits, Project (Stage I)

Course Objectives:

1. To provide an opportunity of designing and building complete system or subsystems based on areas where the student likes to acquire specialized skills.
2. To obtain hands-on experience in converting a small novel idea / technique into a working model / prototype involving multi-disciplinary skills.
3. To embed the skill in a group of students to work independently on a topic/ problem/ experimentation selected by them and encourage them to think independently on their own to bring out the conclusion under the given circumstances of the curriculum period in the budget provided with the guidance of the faculty.
4. To encourage creative thinking processes to help them to get confidence by planning and carrying out the work plan of the project and to successfully complete the same, through observations, discussions and decision making process.

Course Outcomes:

On completion of the course the learner will be able to;

CO1. IMPLEMENT systems approach.
CO2. CONCEPTUALIZE a novel idea / technique into a product.
CO3. THINK in terms of a multi-disciplinary environment.
CO4. TAKE ON the challenges of teamwork, and DOCUMENT all aspects of design work.
CO5. UNDERSTAND the management techniques of implementing a project.
CO6. DEMONSTRATE the final product for Functionality, Designability, and Manufacturability.

Course Contents

Project work in the seventh semester is an integral part of the Term Work. The project work shall be based on the knowledge acquired by the student during the graduation and preferably it should meet and contribute towards the needs of the society.

1. Fabrication of product/testing setup of an experimentation unit/small equipment, in a group.
2. Experimental verification of principles used in Automation and Robotics Applications.
3. Projects having valid database, algorithm, and output reports, preferably software based.
4. Study projects are strictly not allowed.

Project Lab

1. There has to be a Project Lab in the department.

a. It consists of necessary tools required to do a project.
b. Previous projects and their components.
c. Common measuring instruments.
d. Previous years' project reports.
e. Project related books and Publications.

f. Proper linkage with central workshop and various laboratories.
g. Safety measures.
2. All the project activities must be handled with a digital platform which is developed in the department according to the policies laid down by the institution. Respective authority levels to be created to maintain the transparency and confidentiality of the process. (ERP)

Guidelines for Project Execution

At the end of the VIth Semester

1. A group of 3-4 students shall be formed according to their suitability.
2. Department faculty will float prospective Project Titles through Project Coordinator.
3. Department will take care of a list of titles at least two times of the groups.
4. Students will interact with guides for scope and outline of the project.
5. Maximum of two groups will be given to a guide.
6. Guide and Project groups will be finalized at the end of sixth semester so that project work can be started at the start of Seventh semester.

During the VIIth Semester

1. Project work is expected to be done in the Project Lab.
2. Projects must be executed in association with industrial experts/facilities.
3. Progress of project work is monitored regularly on weekly project slots/project day.
4. Regular interval presentations are to be arranged to review and assess the work.
5. Project work is monitored and continuous assessment is done by guide and authorities

Term Work

The student shall prepare the duly certified final report of project work in standard format for satisfactory completion of the work by the concerned guide and head of the Department/Institute.

● Recommended performance measure parameters may Include-Problem definition and scope of the project, Literature Survey, Appropriate Engineering approach used, Exhaustive and Rational Requirement Analysis.

● Comprehensive Implementation - Design, modeling, documentation, Usability, Optimization considerations (Time, Resources, Costing), Thorough Testing, Project Presentation and Demonstration (ease of use and usability), Social and environment aspects.

● The term work under project submitted by students shall include work Diary; Work Diary to be maintained by a group and countersigned by the guide (weekly). The contents of work diary shall reflect the efforts taken by project group for;

a. Searching suitable project work
b. Brief report preferably on journals/research or conference papers/books or literature surveyed to select and bring up the project.
c. Brief report of feasibility studies carried to implement the conclusion.
d. Rough Sketches/ Design Calculations
e. Synopsis

● The group should submit the synopsis in the following form.

i. Title of Project
ii. Names of Students
iii. Name of Guide
iv. Relevance
v. Present Theory and Practices
vi. Proposed work

vii. Expenditure
viii. References
●The synopsis shall be signed by each student in the group, approved by the guide (along with external guide in case of sponsored projects) and endorsed by the Head of the Department.
● Presentation: The group has to make a presentation in front of the faculty of department at the end of semester.

Examination Scheme

During university examination Internal examiner (preferably the guide) and External examiners jointly, evaluate the project work.
● During the process of monitoring and continuous assessment & evaluation the individual and team performance is to be measured.
● The project term work shall be evaluated on the basis of reviews. In first semester two reviews are to be taken and evaluated for total 50 marks (25 marks each)
● Review 1 and 2 will be based on synopsis submission (team members, Title of the Project Work, Abstract, Problem Definition, work done earlier, Objectives of the Project, Methodology of the Project, Application / Significance of the Project, Duration of the Project, Individual Role of the Student, References, sponsored etc.)