Interdisciplinary Project Work		Semester	1/2
Course Code	**1BPRJ258**	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	0:0:2	SEE Marks	50
Total Hours of Pedagogy	**2 (Full day of Saturday may be allotted)**	Total Marks	100
Credits	1	Exam Hours	
Examination type (SEE)	**Presentation/Practical/MCQ**		

Course Outcome (Course Skill Set) - On successful completion, students will be able to:

1. Identify and define problems requiring interdisciplinary knowledge.
2. Apply basic concepts of science, engineering, and technology to design simple solutions.
3. Work effectively in teams with defined roles and responsibilities.
4. Use project management, documentation, and presentation skills.
5. Develop socially relevant, sustainable, and innovative prototypes/solutions.

Week - 1, 2 & 3: Introduction, Orientation, Team Formation and Literature Survey

Week -1&2: Introduction to project-based learning & interdisciplinarity. Motivational talk / case studies of successful student projects. Ice-breaking and team-building activities. Formation of groups (4–6 students). Selection of broad theme areas. Brainstorming techniques {mind mapping, 5W1H (what, who, when, where, why, and how) SCAMPER}. Identifying problems. Discuss feasibility & Interdisciplinarity. Mentor approval of project problem.

Week-3: How to search for prior work (journals, patents, research project, case studies). Understanding user needs. Role of each engineering branch in solving the problem.

Deliverables - Team list + chosen theme area and Literature survey report.

Week- 4, 5 and 6: Problem Statement, Multiple Solution Ideas and Selection of Best IDEA

Week-4&5: Refining the problem statement. Identifying constraints and scope. Framing objectives & expected outcomes. Generating multiple solution ideas. Discussing feasibility (technical, economic, social). Team roles assigned (design, research, coding, documentation, testing).

Week-6: Criteria-based selection of best idea (decision matrix). Rough sketches, block diagrams, flowcharts. Resource planning (materials, software, tools).

Deliverables - Finalized Problem definition with objectives, List of solution concepts (sketches/flowcharts) and Design document (diagrams, flow)

Week -7, 8 and 9: Selection of Best IDEA and Prototyping

Week-7: Work breakdown structure (task division). Timeline for development. Safety & ethical considerations.

Week-8&9: Development of subsystems/modules, Application of classroom knowledge (electrical circuits, coding, mechanics, CAD, etc.), Peer & mentor review sessions.

Deliverables - Prototype development plan, Subsystem demos (partial working models).

Week 9, 10,11&12: Prototyping stage 2 using Atal Idea Lab/Makers Space
Week-9&10: Integration of subsystems. Debugging & troubleshooting. Improvement based on test results. **Week-11&12:** Testing against objectives & user requirements. Experimentation results (tables, graphs). Analysing failures/limitations.
Deliverables – Prototype/working model, Testing Results, Limitations/challenges
Week 13 & 14: Refinement & Pre-Final Review
Week-13&14: Refining prototype for efficiency, cost, sustainability. Internal review & peer feedback. Preparing visuals for final presentation (posters, PPT, demo video).
Deliverables – Final Results of Experimentation or Testing & Working/ Prototype Model
Week 15 &16: Final Demo and Social Pitch
Project pitching to jury - Presentation of the project with impact with assessment, prototype, and sustainability plan
Teaching-Learning Process (Innovative Delivery Methods) **1.Activity Based Learning** **2.Group discussion, Presentations.** **3. one faculty member shall be assigned to group of 60 students or one division.** **4. Each group shall contain Min. 4 and Max. 6 students.** **5. Nature of the group shall be multidisciplinary. (Group shall be formed by selecting students from all branches)**
Assessment Structure: The assessment in each course is divided equally between Continuous Internal Evaluation (CIE) and the Semester End Examination (SEE), with each carrying 50% weightage. • To qualify and become eligible to appear for SEE, in the **CIE**, a student must score at least **40% of 50 marks**, i.e., **20 marks**. • To pass the **SEE**, a student must score at least **35% of 50 marks**, i.e., **18 marks**. Notwithstanding the above, a student is considered to have **passed the course,** provided the combined total of **CIE and SEE is at least 40 out of 100 marks**.

Continuous Internal Evaluation (CIE) –

CIE Marks allocation Parameters for Interdisciplinary Project Work

CIE Parameters (50 Marks)

Stage/Activity	Weightage (%)	Marks (out of 50)	Description
Weeks 1–4: Problem Identification & Literature Survey	10%	05 marks	Focus on forming teams, identifying problems, understanding user needs, and reviewing prior work through journals, patents, etc.
Weeks 5–7: Concept Development & Design	20%	10 marks	Defining problem statements, framing objectives, generating ideas, preparing diagrams, flowcharts, and resource planning.
Weeks 8–11: Prototype Development	30%	15 marks	Creating subsystems, applying theoretical knowledge, peer and mentor review sessions, debugging, and troubleshooting.
Week 12: Testing & Validation	10%	5 marks	Evaluating the prototype's performance, user requirements, experiments, and analysis of failures.
Weeks 13–14: Documentation & Presentation	30%	15 marks	Finalizing the prototype, improving based on feedback, preparing presentations, reports, and demonstration materials.

***Minimum to Qualify for SEE: 20 out of 50 in CIE**

Semester End Examination (SEE) –

SEE to be conducted in batches where the students will exhibit their projects along with the presentation and Viva -voce. – 100 Marks

"SEE shall be conducted by one Internal and one External Examiner"

Component	Weightage (%)	Marks (out of 100)	Description
Final Presentation & Demonstration	**30%**	**30**	**Clear articulation of the problem, solution approach, prototype, and team contribution. Delivery, engagement, and response to questions are evaluated.**
Prototype Quality & Functionality	**30%**	**30**	**Working model evaluation, application of engineering principles, problem-solving effectiveness, debugging, and system integration.**
Documentation Report	**20%**	**20**	**Completeness, structure, accuracy, clarity in diagrams, data analysis, testing results, and conclusions.**
Social Impact & Sustainability	**05%**	**05**	**Relevance to society, cost-effectiveness, ethical considerations, environmental impact, and scalability.**
Innovation & Originality	**10%**	**10**	**Creativity, uniqueness, feasibility, and application of interdisciplinary concepts.**
Viva – voce	**05%**	**05**	**Viva – voce**

Submission Requirements:

- Handwritten activity book with CIE marks and Final project report (Typed or Handwritten).
- Final presentation ppt/pdf (hard and soft copy).
- Prototype or working model [physical or conceptual (shall be drawn/sketched clearly on card sheet paper)].
- Peer/team feedback and reflection entries (if applicable).