AJEENKYA D Y PATIL UNIVERSITY | THE INNOVATION UNIVERSITY

INNOVATIVE TEACHING-LEARNING (PEDAGOGY) REPORT

Title of the Activity	**"Layout Lab" – Simulation-Based Plant Design Challenge**
Subject	**BTE402: Food Process Equipment and Plant Design**
Department	**Food Technology**
Academic Year	**2024-25**
Name of the Faculty	**Prasanna Prakash Bhalerao**
Objective(s)	✓ To simulate the process of food plant layout development and equipment selection. ✓ To reinforce knowledge of plant location, utilities, and workflow management. ✓ To encourage application of theoretical principles in designing efficient, safe, and functional food processing layouts.
Course Outcomes Addressed	✓ **CO1:** Explain the features and layout of food processing plants. ✓ **CO2:** Design pressure vessels, evaporators, and dryers for specific applications. ✓ **CO3:** Apply principles of plant location, layout, and utility estimation in real scenarios. ✓ **CO4:** Develop equipment layouts and process flowcharts for different food processing industries.
Materials/Resources Required	✓ Fruits, sugar, glucose syrup, invert sugar, milk solids, , protein isolates, emulsifiers
Brief Description of the Activity	Students are grouped and assigned a product (e.g., bakery, dairy, or fruit processing unit). Each group is provided with: • A **Plant Design Brief** (product type, scale, site type). • **Equipment Cards** (oven, heat exchanger, evaporator, CIP, dryer, etc.). • **Utility Cards** (electricity, steam, water, waste handling). • **Layout Components** (raw material reception, QC lab, processing, packaging, cold storage, utilities). **Activity Flow**: ✓ Teams create a **block diagram and plant layout** by placing units and connecting flows. ✓ They must consider: ○ Process flow logic ○ Equipment placement ○ Utility and space requirements

	○ Safety and hygiene zoning ✓ They present the final design and defend choices made.
Learning Outcome	✓ Students demonstrate understanding of layout planning, space utilization, and process efficiency. ✓ They gain insights into interconnectivity of plant departments and equipment needs. ✓ Improved teamwork and problem-solving capabilities in a plant design scenario.
Glimpses