

## **Development of projects through students as part of the courses in place of assignment & quiz**

**Objective: To have better understanding of the subject and In order to build the research aptitude in UG students**

The students of UG class under BAG1004 were divided into groups to work on the activity. This was conducted in the duration of two weeks during class hours. The details of the innovative method followed are given below-

### **Idea creation**

The main aim of this initiative was to encourage the students to identify and analyse the existing problems in the community and develop research-based ideas to address them using different value-added products. In this, students were guided to think critically, creatively and sustainably towards problem solving and entrepreneurial context. During brainstorming session, students were introduced to several real-life community issues such as food waste from agricultural produce globally, nutrient deficiencies among different age groups, plastic pollution, underutilized and endangered fruits and vegetables, and post-harvest losses of perishable goods. Few examples on the existing work by different researchers and industrialists towards addressing these issues like fat replacers, food analogs, waste valorisation, use of underutilized products etc., in attaining sustainable goals were also discussed. The students were clearly instructed regarding their product design considering the cost and time. At the end, the students were asked to form teams, and timeline of projects was instructed.

### **Solution**

Once the problem was identified, different student teams proposed potential solutions in the form of value-added products. Each proposed solution was evaluated on the basis of social relevance, technical feasibility and sustainability, and approval was granted. The approved proposals include the following:

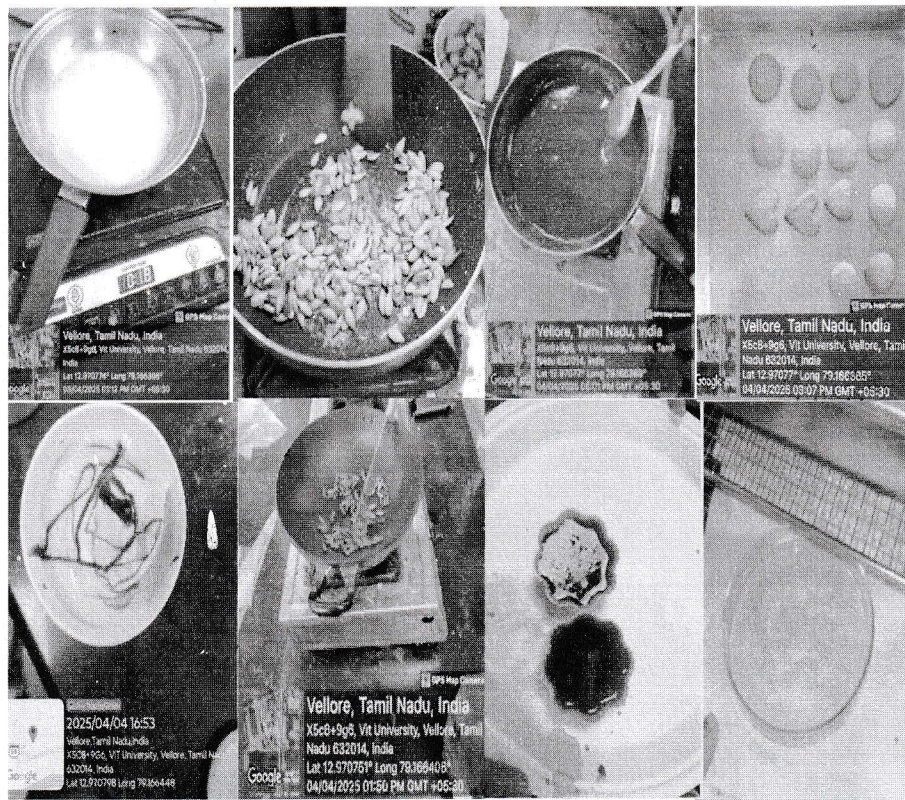
<b>S.No.</b>	<b>Title of the proposal</b>	<b>S.No.</b>	<b>Title of the proposal</b>
1.	Coffee powder from jackfruit seeds	8	Hibiscus flower gummies
2.	Mango peel-based jam	9	Pumpkin seeds butter
3.	Potato peel halwa	10	Whey protein gummies
4.	Milkshake from mango seed kernels flour	11	Jam using pectin from citrus peel
5.	Chocolate from date seed powder	12	Citrus peel candies
6.	Jack fruit seed hummus	13	Carrot peel biscuit
7.	Natural food colour from vegetable and fruit waste	14	Peanut shells infused biscuits

### **Methodology**

In this class, student teams presented their methodologies, which included a problem statement, innovative product idea, and detailed description of how it addressed the problem. Each team's idea was evaluated based on cost and time constraints, as well as product feasibility within the given timeline. Ideas that do not meet the evaluation criteria were explained about the non-feasibility of their idea and were asked for re-submission with necessary changes. The validated ideas were approved and students were instructed to prepare for preliminary preparations in the lab.

## Lab work

Students were instructed to use relevant facilities available in the laboratory as per their requirement to accomplish the intended product development. Processes like baking, grinding, juicing and filtration, roasting, sieving, cooking, and extraction process for color and pectin were performed according to their products. They also performed physicochemical (length, breadth, TSS, pH) and sensory (appearance, taste, color, texture, mouthfeel) characteristics accordingly. This activity gave them an opportunity to have a hands-on training on how to handle food and food products. They learned about HACCP principles to be followed during food production. They also, learned to handle the equipment on their own. This group activity helped boost their confidence, in laboratory work and product development process. Students became familiar with the processes and their principle required for the product development.



The data required for raw material processing and the data obtained from measuring the physicochemical and sensory characteristics of developed products were analyzed and documented. A report was generated, which comprised of the processes, analyzed data and the inference of their work. The individual reports were submitted and evaluated.

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