GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Bachelor of Vocation

Level: Under Graduate

Branch: Food Processing and Quality Control

Subject Code: BV04009051

Subject Name: Recent Advances in Fruits and Vegetable Processing- Lab

w. e. f. Academic Year:	2025-26
Semester:	04
Category of the Course:	Core Course

Prerequisite:	NA
Rationale:	The course equips students with knowledge of modern post-harvest handling and innovative processing technologies. It covers minimal processing, edible coatings, non-thermal preservation methods, and quality evaluation and also focusing on quality, safety, and value addition to meet current industry demands.

Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes
01	Explain the physiology, ripening, and post-harvest changes of fruits and vegetables.
02	Apply minimal processing, fresh-cut handling, and edible coating techniques to enhance product quality and shelf life.
03	Evaluate recent thermal and non-thermal processing methods such as HPP, PEF, microwave, and ultrasonics.
04	Assess quality attributes, safety aspects, and by-product utilization in fruits and vegetable processing
05	Integrate modern technologies for innovative product development and improved value addition.

Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
				Theory		Tutorial / Practical		
L	T	PR	C	ESE (E)	PA/CA (M)	PA/CA (I)	ESE (V)	
0	0	2	1	0	0	20	30	50

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Practical Content:

P.No.	Content	No. of Hours	% of Weightage
1.	Advanced Drying Techniques: Practical sessions on techniques such as vacuum drying, for efficient preservation of fruits and vegetables.	2	8
2.	Study of Freeze-Drying Technique and Its Effect on Quality of Food Products	2	7
3.	Evaluation of Microwave Drying Technique for Food Products	2	7
4.	Determination of the size, shape, sphericity of fruits and vegetables	2	7
5.	Determination of roundness and roundness ratio of fruits and vegetables	2	8
6.	Demonstrations on how by-products from fruit and vegetable processing can be utilized to produce value-added products like dietary fibers, antioxidants, and natural colorants.	2	7
7.	Determination of density of fruits and vegetables.	2	7
8.	Determination of area-volume-mass relationship of fruits and vegetables.	2	7
9.	Determination of bulk density, true density and porosity of fruits and vegetables	2	8
10.	Evaluation of different packaging methods.	2	7
11.	Experiments on drying of fruits and vegetables.	2	7
12.	Controlled atmosphere storage and quality evaluation.	2	7
13.	Conducting sensory tests to evaluate the acceptability and consumer preference of processed fruit and vegetable products.	2	7
14.	Evaluation of Fruit and Vegetable Washer and Its Types	2	7
15.	Evaluation of Graders (Screen, Roller, Belt, Spiral, Length, Weight, Optical/Electronic, and Manual Graders)"	2	8
	Total	**30**	**100**

Suggested Specification Table with Marks (Practical):

Distribution of Practical Marks					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
10	**10**	**10**	**10**	**10**	**0**

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

References/Suggested Learning Resources:

(a) Books:

1) Sumanbhatti & Uma Varma. 1995. Fruit and Vegetable Processing. CBS.
2) Mircea EnachescaDanthy. 1997.Fruit and Vegetable Processing. International Book Publ.
3) Srivastava RP & Sanjeev Kumar. 1994. Fruit and Vegetable Preservation. Principles and Practices.
4) International Book Distr.
5) Cruesss WV. 2000. Commercial Fruit and Vegetable Products. Agrobios.
6) P. Fellows. Food Processing Technology
7) Thompson AK. 1996. Post Harvest Technology of Fruits and Vegetables. Blackwell.
8) Verma LR & Joshi VK. 2000. Post Harvest Technology of Fruits and Vegetables. Vols. I-II. Indus Publ.

(b) Open-source software and website:

1) https://agrimoon.com/wp-content/uploads/Engineering-Properties-of-Biological-Materials-and-FoodQuality.pdf
2) https://ecourses.icar.gov.in/e-Leaarningdownload3_new.aspx?Degree_Id=04

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