GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Bachelor of Vocation

Level: Under Graduate

Branch: Food Processing and Quality Control

Course / Subject Code: BV03009071

Course / Subject Name: Fruits and Vegetables Drying/ Dehydration Technician

w. e. f. Academic Year:	2024-25
Semester:	3
Category of the Course:	OJT Elective Subject

Prerequisite: **Basic understanding of agriculture or food processing.**

Rationale:	India is one of the largest producers of fruits and vegetables, but post-harvest losses remain a major challenge. Drying and dehydration techniques are vital to enhance shelf life, reduce wastage, and ensure year-round availability. This course equips students with the theoretical knowledge and practical skills to process fruits and vegetables into high-value dehydrated products using advanced drying technologies, thereby enhancing employability in the food processing sector.

Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes
01	Explain the principles, methods, and importance of drying and dehydration for fruits and vegetables.
02	Operate and maintain equipment used in the drying and dehydration process.
03	Develop protocols for processing and quality assurance in dehydration units.
04	Design dehydration plans based on specific fruits or vegetables to ensure maximum efficiency and quality.

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	12	6	0	0	100	100	200

Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	**Introduction to Drying and Dehydration** Principles and importance of drying and dehydration.	**35**	**15**

	Overview of post-harvest losses and role of dehydration in value addition. Properties of fruits and vegetables affecting drying efficiency. Natural vs. mechanical drying methods.		
2.	**Drying Techniques and Equipment** Sun drying, hot air drying, freeze drying, and vacuum drying. Components of drying equipment (e.g., trays, chambers, blowers). Operating principles and maintenance of dryers. Energy efficiency and environmental considerations.	**40**	**25**
3.	**Pre-Treatment and Post-Dehydration Processing** Pre-treatments: blanching, sulfiting, and osmotic dehydration. Packaging materials and methods for dehydrated products. Storage conditions and shelf-life considerations. Quality assurance and testing parameters (moisture content, microbial load).	**35**	**20**
4.	**Pre-Treatment and Post-Dehydration Processing** Pre-treatments: blanching, sulfiting, and osmotic dehydration. Packaging materials and methods for dehydrated products. Storage conditions and shelf-life considerations. Quality assurance and testing parameters (moisture content, microbial load).	**35**	**20**
5.	**Practical Applications and Business Models** Hands-on operation of drying equipment. Formulating business plans for small-scale dehydration units. Market trends and consumer preferences for dehydrated products. Legal regulations and certifications for food processing.	**35**	**20**
	Total	**180**	**100**

Suggested Specification Table with Marks (Practical):

Distribution of Practical Marks					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
15	**20**	**20**	**15**	**15**	**15**

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. Sivasankar, B. *Food Processing and Preservation.* PHI Learning Pvt. Ltd.
2. Srivastava, R. P., & Kumar, S. *Fruit and Vegetable Preservation: Principles and Practices.* International Book Distributing Co.
3. Verma, L. R., & Joshi, V. K. *Post-Harvest Technology of Fruits and Vegetables*. Indus Publishing.

(b) Open-source software and website:

1. FSSAI Official Website
2. Indian Institute of Food Processing Technology (IIFPT)

Suggested Course Practical List:

1. Preparation and pre-treatment of fruits and vegetables for drying.
2. Operation and maintenance of solar and hot-air dryers.
3. Determination of moisture content in dehydrated products.
4. Quality analysis: microbial testing and organoleptic evaluation.
5. Packaging and storage experiments for dehydrated products.
6. Economic analysis of dehydration techniques for specific produce.

Suggested Activities for Students: Project Work Book

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