GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Bachelor of Vocation

Level: Under Graduate

Branch: Food Processing and Quality Control

Subject Code: BV02009051

Subject Name: Food Processing Technology Lab

w. e. f. Academic Year:	2024-25
Semester:	2
Category of the Course:	Core Courses

Prerequisite:	NA
Rationale:	The "Food Processing Technology - Lab" course is designed to provide hands-on experience in various food preservation techniques, focusing on the impact of different methods on the quality, safety, and shelf life of food products. Students learn to assess spoilage, use heat treatments, apply chemical preservatives, and implement modern preservation methods such as freeze-drying and high-pressure processing. This lab course emphasizes practical skills in food preservation and introduces innovative techniques like pulse electric field processing, equipping students for roles in the food processing and quality assurance industries.

Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes
01	Understand the causes and degrees of spoilage in perishable foods
02	Proficient in various preservation techniques, including blanching, pasteurization
03	Practical skills in drying methods and learn to preserve foods using cold and freezing processes
04	Develop analytical and technical skills, enhancing their ability to innovate and address challenges

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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Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	Demonstration of various perishable food items and degree of spoilage	3	10
2.	Blanching of selected food items; Preservation of food by heat treatment- pasteurization;	4	10
3.	Preservation of food, concentration of sugar: Jam; Preservation of food by using salt: Pickle; Preservation of food by using acidulants i.e. pickling by acid, vinegar or acetic acid;	4	15
4.	Preservation of food by using chemical preservatives; Preservation of bread, cake using mold inhibitors;	4	15
5.	Drying of fruit slices pineapple slices, apple slices in cabinet drier; Drying of green leafy vegetables;	4	10
6.	Drying of mango/other pulp by foam-mat drying; Drying of semisolid foods using roller dryers; Drying of foods using freeze drying process	4	15
7.	Demonstration of preserving foods under cold vs. freezing process; Processing of foods using fermentation technique, i.e. preparation of sauerkraut	4	15
8.	Study on effect of high pressure on microbe; Study on effect of pulse electric field on food.	3	10
	Total	**30**	**100**

Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
25	20	15	10	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. “Handbook of Food Preservation" edited by M. Shafiur Rahman
2. "Emerging Technologies for Food Processing" edited by Da-Wen Sun
3. Food chemistry Author: O.R. Fennema (Marcel Dekkar Inc.)
4. "Food Processing Technology: Principles and Practice" by P.J. Fellows
5. "Frozen Food Science and Technology" edited by Judith A. Evans

(b) Open-source software and website:

1. **Food and Agriculture Organization (FAO)** - http://www.fao.org/home/en/ Offers extensive resources on food preservation techniques, including drying, freezing, and fermentation.
2. **National Center for Home Food Preservation** - https://nchfp.uga.edu/ Provides guidelines and demonstrations for preserving food through canning, freezing, and drying.
3. **FSSAI (Food Safety and Standards Authority of India)** - https://fssai.gov.in/ Includes standards and safety protocols for food processing and preservation.
4. **NCBI Bookshelf** - https://www.ncbi.nlm.nih.gov/books/ Contains scientific studies and protocols for advanced food preservation methods like high-pressure and electric field processing.
5. **Open Wet Ware** - https://openwetware.org/ Provides protocols and lab techniques for studying microbial effects on food and fermentation processes.
6. **Dairy Processing Handbook** (applicable to preservation techniques) https://dairyprocessinghandbook.com/ A detailed guide to food preservation techniques, particularly useful for drying and freezing methods.
7. **LibreOffice Calc** - https://www.libreoffice.org/ An open-source spreadsheet tool useful for recording experimental data, including spoilage studies and preservation outcomes.

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