CVM UNIVERSITY
Aegis: Charutar Vidya Mandal (Estd.1945)

FACULTY OF ENGINEERING & TECHNOLOGY

Effective from Academic Batch: 2022-23

Programme: Bachelor of Technology (Dairy Technology)

Semester: VI

Course Code: 202200601

Course Title: Ice cream and Frozen Dairy Products

Course Group: Professional Core Course

Course Objectives: The course of Ice cream and frozen dairy products intends to familiarize students with the selection of ingredients and its role in Ice cream making. The course aims to provide the knowledge of ice cream processing i.e. making the mix, ageing and freezing operations. Students will also aware about the recent technologies, safety issues and management being practiced in Ice cream industry.

Teaching & Examination Scheme:

Contact hours per week			Course Credits	Examination Marks (Maximum / Passing)				
				Theory		J/V/P*		Total
Lecture	Tutorial	Practical		Internal	External	Internal	External	
3	0	2	4	50 / 18	50/ 17	25 / 9	25 / 9	150 / 53

* **J**: Jury; **V**: Viva; **P**: Practical

Detailed Syllabus:

SN	Contents	Hours
1	**Classification of Ice cream and frozen desserts** History, development and status of ice cream industry, Definition, classification and composition of ice cream and other frozen desserts, Nutritive value of ice cream	6
2	**Ingredients in ice cream** Role of Ice cream constituents, role of dairy & non dairy ingredients in Ice cream preparation, Dairy ingredients in ice cream, Stabilizers and emulsifiers-their classification, properties and role in quality of ice cream, mechanism of action, influence on mix and ice cream, non dairy ingredients in Ice cream	8
3	**Technological aspects of ice cream manufacture** Effect of process treatments on the physico-chemical properties of ice cream mixes and ice cream, Physico-chemical properties of ice cream, fat destabilization, microstructure	7
4	**Freezing and storage of ice cream** Freezing of ice cream mix and control of over run, Thermodynamics of freezing and refrigeration loads, freezing curve, Packaging, hardening, storage and shipping of ice cream, defects in ice cream.	7

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5	**Hygiene, cleaning and sanitation and safety aspects in ice cream plant** Hygiene, cleaning and sanitation of ice cream plant, Microenvironment in ice cream, critical process factors & their impact on entry of pathogen in ice cream, their survival during storage, food poisoning out breaks, food safety & legal standards.	9
6	**Advances in ice cream industry** Recent advances in ice cream industry and plant management, Low-calorie, reduced fat, diabetic and dietetic ice cream and frozen desserts, Technology for preparation of dried ice cream mix	8
	Total	**45**

List of Practical:

1	Calculation of standardization of ice-cream mixes
2	Manufacture of plain and flavored ice-cream
3	Calculation of overrun and melting resistance
4	Preparation of soft served and filled ice-cream
5	Manufacture of kulfi and frozen dessert
6	Study of batch type freezers
7	Study of continuous type freezers
8	Compositional analysis of ice-cream
9	Preparation of frozen yoghurt
10	Preparation of low calorie/reduced fat ice cream

Reference Books:

1	Milk and Milk processing by Shivashraya Singh, New India Publishing Agency
2	An introduction to Dairy Technology by Sandeep Tomar, Pragun Publication
3	Outlines of Dairy Technology by De Sukumar, Oxford Publication
4	Dairy Science and Technology by Pieter Walstra, Taylor & Francis

Supplementary learning Material:

1	Ice cream and frozen desserts, https://www.researchgate.net/publication/227580162
2	ecoursesonline.iasri.res.in
3	Ice cream composition and health benefits , http://dx.doi.org/10.1016/B978-0-12-384947-2.00385-8

Pedagogy: Following one or more points can be incorporated as relevant pedagogy methods.

- Direct classroom teaching
- Audio Visual presentations/demonstrations
- Assignments/Quiz
- Continuous assessment
- Interactive methods
- Seminar/Poster Presentation
- Industrial/ Field visits
- Course Projects

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Suggested Specification table with Marks (Theory) (Revised Bloom's Taxonomy):

Distribution of Theory Marks in %						**R**: Remembering; **U**: Understanding; **A**: Applying; **N**: Analysing; **E**: Evaluating; **C**: Creating
R	**U**	**A**	**N**	**E**	**C**	
15%	15%	15%	20%	20%	15%	

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Course Outcomes (CO):

Sr.	Course Outcome Statements	%weightage
CO-1	To understand the processing involved in ice cream making	25
CO-2	To solve the ice cream mix calculations and overrun for acceptable body, flavour and texture in the product	15
CO-3	To illustrate the freezing operation and overrun control for stable and economical product	20
CO-4	To evaluate the hygienic, sanitation and management required for ice cream making in dairy industry	20
CO-5	To develop low fat, low sugar, high protein rich ice cream targeted to health conscious people	20

Curriculum Revision:	
Version:	2.0
Drafted on (Month-Year):	June-2022
Last Reviewed on (Month-Year):	-
Next Review on (Month-Year):	June-2025

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