



COURSE SYLLABUS

General information

Course title:	ICE CREAM TECHNOLOGY
ISVU course code:	266828
Course instructor:	
Course assistant:	
Study programme and specialization in which the course is taught:	Undergraduate Professional Study of Food Technology
ECTS credits:	2.0
Semester of the course execution:	IV.
Exam prerequisites:	None
Course objectives:	To provide students with fundamental knowledge and skills about ice cream production processes. To equip students with an understanding of key technological processes, raw materials, and qualitative and sensory aspects in ice cream production. To familiarize students with industrial standards and regulations in the field of ice cream technology. To promote awareness of innovations in the ice cream industry and advocate for sustainable practices in ice cream and dairy dessert production.

Course structure

Teaching mode	Number of contact hours per semester:	Student's requirements per teaching mode
Lectures:	15	Completed with at least 80% attendance
Exercises (auditory, linguistics):		
Exercises (laboratory, practical):	15	Completed with at least 80% attendance
Field work:		
Other:		
TOTAL:	30	

Monitoring of students' work and knowledge evaluation during the course

OUTCOMES		Written exam	Oral exam	Practical work	Total	Pass	Time frame for the recognition of the outcome
Outcome 1	Define key elements of ice cream technology, including ice cream classification, composition of ice cream mix, and its properties.	10%	2%	2%	14%	7%	End of the first examination period
Outcome 2	Describe and apply key technological processes in ice cream production.	10%	2%	2%	14%	7%	End of the first examination period



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Outcome 3	Develop ice cream recipes with different textures, flavors, and nutritional characteristics, taking into account consumer preferences.	10%	2%	2%	14%	7%	End of the first examination period
Outcome 4	Apply quality control principles in ice cream production, including monitoring raw materials, production processes, and finished products.	10%	3%	3%	16%	8%	End of the first examination period
Outcome 5	Identify potential deficiencies or challenges in ice cream production and propose possible solutions.	10%	2%	2%	14%	7%	End of the first examination period
Outcome 6	Understand the importance and specifics of ice cream packaging and labeling, including legal requirements related to packaging information.	10%	2%	2%	14%	7%	End of the first examination period
Outcome 7	Apply relevant industry standards, regulations, and safety guidelines related to ice cream production.	10%	2%	2%	14%	7%	End of the first examination period
Total % grade points		70%	15%	15%	100%	50%	
Share in ECTS		1,4	0,3	0,3	2		

Knowledge evaluation on exams



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Exam prerequisites					
OUTCOMES		Written exam	Oral exam	Total	Pass
Outcome 1	Define key elements of ice cream technology, including ice cream classification, composition of ice cream mix, and its properties.	10%	4%	14%	7%
Outcome 2	Describe and apply key technological processes in ice cream production.	10%	4%	14%	7%
Outcome 3	Develop ice cream recipes with different textures, flavors, and nutritional characteristics, taking into account consumer preferences.	10%	4%	14%	7%
Outcome 4	Apply quality control principles in ice cream production, including monitoring raw materials, production processes, and finished products.	10%	6%	16%	8%
Outcome 5	Identify potential deficiencies or challenges in ice cream production and propose possible solutions.	10%	4%	14%	7%
Outcome 6	Understand the importance and specifics of ice cream packaging and labeling, including legal requirements related to packaging information.	10%	4%	14%	7%
Outcome 7	Apply relevant industry standards, regulations, and safety guidelines related to ice cream production.	10%	4%	14%	7%
Total % of grade points		70%	30%	100%	50%
Share in ECTS		1,4	0,6	2	

Review of units per week with associated learning outcomes

Week	Lecture course content and learning outcomes:	Outcome	Exercises course content and learning outcomes:	Outcome
1.	Basic Principles of Ice Cream Technology	01	Introduction and Safety Measures	01
2.	Raw Materials in Ice Cream Production	01	Analysis of Raw Materials	01
3.	Classification of Ice Cream by Ingredients and Texture	01	Analysis of Raw Materials	01
4.	Ice Cream Mix Formulation	01, 02	Formulation of Ice Cream Mix	01, 02
5.	Technological Processes in Ice Cream Production - Introduction and Mix Preparation	02	Production of Ice Cream with Additives	03
6.	Technological Processes in Ice Cream Production - Homogenization and Pasteurization	02	Production of Sugar-Free Ice Cream	03
7.	Technological Processes in Ice Cream Production - Freezing and Aging of the Mix	02	Production of Ice Cream with Various Flavors and Colours	03
8.	Analysis of Ice Cream Mix Properties	01	Production of High-Protein Ice Cream	03
9.	Nutritional Value of Ice Cream	03	Physicochemical Analysis of Selected Properties of Produced Ice Creams	04
10.	Ice Cream Defects and Their Solutions	05	Evaluation of Nutritional Components of Produced Ice Creams	04



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11.	Introduction to Frozen Dairy Desserts	01	Microbiological Analysis	04
12.	Technological Processes in Frozen Dairy Desserts Production	02	Stability Analysis of Ice Cream during Storage	04
13.	Packaging and Labelling of Ice Cream	06	Sensory Evaluation of Produced Ice Creams - Impact of Additives on Taste, Odor, Color, and Consistency	04
14.	Packaging and Labelling of Frozen Dairy Desserts	01	Interpretation of Conducted Analyses Results and Discussion	01
15.	Legal Framework in the Production of Ice Cream and Frozen Dairy Desserts	01	Preparation of Ice Cream Labeling According to Applicable Regulations	01

References (compulsory / additional)

Compulsory literature:	
1. Božanić, R., Jeličić, I. i Bilušić, T. Analiza mlijeka i mliječnih proizvoda, Plejada, Zagreb, 2010.	
2. Tratnik, Ljubica ; Božanić, Rajka Mlijeko i mliječni proizvodi / Bašić, Zoran (ur.). Zagreb: Hrvatska mljekarska udruga, 2012. ISBN: 978-953-7472-06-1	
3. Marshall, R.T., Goff, H.D. i Hartel, R.W. Ice Cream, 6. izdanje, Kluwer Academic, New York, 2003.	
4. Clarke, C. The Science of Ice cream, The Royal Society of Chemistry, 2004.	