University of Zagreb Faculty of Agriculture
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Technology production of cream, butter and dairy-based desserts (296576)

Course coordinator

Assoc. Prof. Iva Dolenčić Špehar, PhD

Course description

Course objectives are basic theoretical knowledge in the technology of production of different types of cream, butter and dairy-based desserts.

ECTS: **4.00**

Teaching hours: 60
Lectures: 42
Laboratory exercises: 4
Practicum: 10
Seminar: 4

Lecturer

- Assoc. Prof. Iva Dolenčić Špehar, PhD
- Asst. Prof. Darija Bendelja Ljoljić, PhD

Grading

Sufficient (2): 61-70%
Good (3): 71-80%
Very good (4): 81-90%
Excellent (5): 91-100%

Type of course

- Graduate studies / MS Courses taught in English (Elective course, 2 semester, 1 year)

Types of instruction

- Lectures
- Laboratory practice/exercises
- Practicum
- Seminars

Learning outcomes

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Learning outcome	Evaluation methods
1. Express the economic importance of the production of cream, butter and dairy-based desserts in Croatia and the EU,	
2. Explain the importance of producing quality milk to produce a quality product,	
3. List the types of cream, butter and dairy-based desserts, describe the technological processes in the production of different types of cream, butter and dairy-based desserts,	
4. Explain the choice of additives used in the production of cream, butter and dairy-based desserts,	
5. Distinguish between technological and microbiological agents of deterioration,	
6. Develop a production plan for different types of cream, butter and dairy-based desserts independently.	

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Weekly class schedule

1. Introduction to the subject of Technology for the production of cream, butter and dairy-based desserts - Introductory lecture - introducing the student to the content of the course, the importance in the economy, nutritional and health value of cream, butter and dairy-based desserts, production of cream, butter and dairy-based desserts in Croatia and the EU.
2. Preparation of milk / cream - Production of quality milk, physicochemical parameters of cream, butter and dairy-based desserts.
3. Cream production technology - Production technology for various types of sour cream (sour cream, half fat cream, oversized cream, whipping cream, coffee cream, cooking cream). Technological procedures in the production of cream: milk preparation, standardization, heat treatment (pre-heating, pasteurization, sterilization), homogenization, cooling, packaging and storage). Supplements in cream production.
4. Butter production technology - Production technology for different types of butter (butter made from sweet cream, butter made from sour cream, salted butter, non-standard butter, spreadable fat). Description of butter production in the traditional way, Fritz process, α-continuous process, NIZO process. Technological processes in the production of different types of butter (milk/cream preparation, heat treatment, ripening, butyrification, packaging and storage). Additive in the manufacture of butter (salt, spices, coloring agents, emulsifiers).
5. Dairy-based desserts production technology - Production technology for different types of dairy-based desserts (pudding, fruit yogurt, mousse). Description of technological processes in the production of different types of dairy-based desserts (milk preparation, standardization, heat treatment, additive addition, refrigeration, packaging and storage). Additives in the production of dairy-based desserts (emulsifiers, stabilizers, sweeteners, flavor enhancers, preservatives, colors, aromas, fruits and fruit pastes, spices).
6. Calculations in the production of cream, butter and dairy-based desserts - Calculations in the production of cream, butter and dairy-based desserts.
7. Methods for determining the physicochemical composition of cream, butter and dairy-based desserts - Sampling and preparation of samples for analysis cream (density, acidity, suitability for whipping), butter (acidity, adulteration, the distribution of water in the butter), dairy-based desserts (acidity).
8. Equipment in the production facility - Equipment for the production of cream, butter and dairy-based desserts, equipment description and requirements for in-plant equipment.
9. Technological errors in the production of cream, butter and dairy-based desserts - Production errors during the manufacturing process, contamination with various microbial spoilage agents, and errors during product packaging and storage.
10. Seminars and workshops - Presentation of seminar papers in the context of the teaching material.

Obligatory literature

1. Spreer E. (1998). Butter manufacture. In: Milk and Dairy Product Technology (Fennema O. R., Karel M., Sanderson G. W., Tannnenbaum S. R., Walstra, P., Whitaker J. R., ur.), Marcel Dekker, New York, SAD, 203-242.
2. Saunders A. B. (2011). Dairy-based desserts. In: Encyclopedia of Dairy Sciences (Fox P. F., McSweeney P.L. H., ur.), Elsevier, United Kingdom, 905-912.

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Recommended literature

1. Sohrabvandi S., Nematollahi A., Mortazavian A. M., Vafaee R. (2013). Effects of homogenization pressure and sequence on textural and microstructural properties of milk-based creamy dessert. Journal of Paramedical Sciences, 4 (1), 1-7.
2. Rønholt S., Madsen, A. S., Kirkensgaard J. J.K., Mortensen K., Knudsen J. C. (2014). Effect of churning temperature on water content, rheology, microstructure and stability of butter during four weeks of storage. Food Structure, 2 (1-2), 14-26.

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