Food Science MSc Final exam II.
Differentiated Professional Knowledge
Product and Technology Development Specialization
2021-2022 academic year

The final exam topics of the Food Science and Engineering MSc programme cover differentiated knowledge in 12-credit worth from the following subjects: Post-harvest technologies and product development; Preservation technologies and product development; Livestock products technologies and product development and Processing technologies of plant-based foods.

Topics in Post-harvest technologies and product development

1. Biochemical and physiological processes of plant-derived food raw materials during ripening and storage.
2. The effect and role of cold in the regulation of physiological processes of plant-derived raw materials and foods and in the efficiency of storage.
3. The role of humidity in the shelf life and quality deterioration of plant-derived raw materials and foods.
4. The role and importance of gas composition in the shelf life of plant-derived raw materials and foods.
5. Methods and tools for cooling, forms of construction and technical conditions.
6. Principles and types of controlled atmosphere storage.

Topics in Preservation technologies and product development

7. System of heat-treatment preservation technologies, selection of technological parameters and their impact on product quality.
8. Relationships between production technology operations and product quality in the production of fruit concentrates.
9. The theory and practical implementation of production of vegetable concentrates and spray dried products. The effect of technological parameters on product quality.
10. Freezing of foods (as a water-biopolymer system). Technological and technical conditions determining the quality of frozen products. Factors influencing quality change during frozen storage, quality change models (T-T-T).
11. Cryoconcentration and freeze-drying (lyophilization): theoretical background, technology, machines, equipment.
12. Fundamentals of minimal processing technologies (sous vide, HHP, PEF), advantages, disadvantages and application opportunities of the technologies.

Topics in Livestock products technologies and product development

13. Livestock product technologies based on gel formation (meat batter-based and cured products, fermented dairy products, acid set and rennet coagulated cheeses)
14. Livestock product technologies based on emulsion formation (butter, butter-based products, spreadable liver sausages, pâtés, raw-cooked meat products)
15. Primary meat processing operations, the effects of animal welfare and animal treatment standards on meat quality, physico-chemical and microbiological properties
16. Impact of general dairy technological operations on the quality, physico-chemical and microbiological properties of milk and dairy products
17. Impact of minimal processing technologies on dairy, meat and poultry raw materials and products, monitoring of product quality changes during storage and transport
18. Ripening and ripening technologies and biochemical processes of cheese, meat and raw-fermented products

Topics in Processing of plant materials for food

19. Food grinding technologies.
20. Food technologies based on crystallization and dissolution.
21. Production technology and stability of food emulsions.
22. Heat-induced transformations in food technology: technology of roasting and baking.
23. Production technology of masses made from oilseeds, e.g chocolate production.
24. Production technology of masses made from cereal/starch flour, e.g bread production.