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| **Title and code** of the subject: **Packaging technology MTBE7039** | **ECTS Credit Points: 3** |
| **Type** of the subject: compulsory / **optional** | |
| **Ratio of theory and practice: 100/** (credit%) | |
| **Type and number of classes per semester**: 2 hour(s) lecture and 0 hour(s) practice per **semester** | |
| **Type of exam**: exam / **practical course mark** | |
| **Subject in the curriculum:** **semester 4.** | |
| Preliminary requirements:- | |

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| **Summary of content - theory**: |
| Course objectives: The types of packaging materials (textiles, wood, metal, glass, paper and plastic), pairing possibilities. The quality of packaging and reliability. Packaging machines and devices, environmental impact of packaging materials, re-processability. Food and packaging interaction (diffusion and migration). The food commodity marking (labeling). Mandatory and voluntary labeling (use of information and advertising).  **Schedule:**   1. Packing elements (basic concepts, aims and tasks of the pack) 2. Functions of the packaging, Basic information on the labelling of packaging 3. Packaging Training (consumer and multipack packaging) 4. Packaging design, marketing 5. Paper packaging 6. Metal packaging 7. Plastic packaging I. 8. Plastic packaging II. Migration from plastic packaging into food 9. Plastic packaging III. 10. Glass containers (narrow and wide-mouth jars and closing their methods) 11. Wood packing materials 12. Textiles packing materials 13. Combined packaging supplies 14. Packaging machinery |
| **Summary of content - practice**: |
| **Schedule:**   1. Packing elements (basic concepts, aims and tasks of the pack) 2. Functions of packaging, Basic information on the labelling of packaging 3. Packaging Training (consumer and multipack packaging) 4. Packaging design, marketing 5. Paper packaging 6. Metal packaging 7. Plastic packaging I. 8. Plastic packaging II. Migration from plastic packaging into food 9. Plastic packaging III. Calculations 10. Glass containers (narrow and wide-mouth jars and closing their methods) 11. Wood packing materials 12. Textiles packing materials 13. Combined packaging supplies 14. Packaging machinery |
| **Literature, handbooks in English** |
| 1. Richard Coles, Derek McDowell, Mark J. Kirwan: 2003. Food packaging technology. CRC Press, London. 346 p. ISBN 9780849397882. 2. Dong Sun Lee, Kit L. Yam, Luciano Piergiovanni: 2008. Food Packaging Science and Technology. CRC Press, London. 656 p. ISBN 9780824727796. 3. Gordon L Robertson: 2013. Food Packaging Principles and Practice. CRC Press, London. 686 p. ISBN 9781439862421. |
| **Competencies gained** *(acc. to the Regulation on training and outcome requirements)* |
| 1. **Knowledge:**  * Students have to know the basic principles of laboratory examination for the food technology and food safety analysis.  1. **Skills:**  * Students have to have the ability to learn laboratory techniques, taking into account the environmental and health protection standards, and apply new methods in the whole area of food production.  1. **Attitude:**  * Students have to be receptive to learn the needed theory, in order to understand how the equipment and tools, used in food industry, function.  1. **Autonomy and responsibility:**  * Students should be able to take the responsibility for their own work and and for the work of their colleagues under their supervision as well. |

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| **Responsible lecturer: Béla Dr. Kovács; Éva Bacskainé Dr. Bódi** |
| **Other lecturer(s): -** |

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| **Terms of course completion:** |
| 1. Giving presentation (10 minutes) 2. Written exam (minimum marks when percentage is 60%) |
| **Form of examination:** |
| Written exam |
| **Requirement(s) to get signature:** |
| Giving presentation (10 minutes) |

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| **Exam questions:** |
| 1. Essentials tools of packaging 2. What are dangerous goods? + Classification of dangerous goods 3. In what ways can deceptive packaging mislead the customer? 4. Types of packaging + Functions of packaging 5. Materials of edible packaging + Advantages of edible packaging 6. Package selection criteria (5 points) 7. Advantages and disadvantages of glass packaging (8 points) 8. Types of migration 9. Types of waste management 10. Some recent trends in Packaging Design 11. Agents of food biodeterioration 12. Why can we say that packaging communicates all the information? 13. Types of textil packaging 14. Metal packaging: types of coating 15. Advantages and disadvantages of metal packages 16. Mention 3 examples of innovative food packaging! 17. Factors affecting shelf life 18. Advantages and disadvantages of paper packaging 19. Aim and technique of CR-packaging 20. List 10 examples of the most known organic contaminants in food packaging materials 21. Types of Logistical Packaging 22. Vacuum packaging 23. Advantages and disadvantages of metal packages 24. Primary and secondary funtions of packaging 25. Migrating components (Plastic name, common uses, adverse health effects) 26. Migration – food to packaging and packaging to food 27. Factors affecting Shelf Life; Preservation methods 28. Main constituents of the wood; Bleaching 29. Major food deterioration reactions, Common food preservation methods 30. Advantages and disadvantages of Aseptic Packaging 31. Glass production 32. Reasons for packaging design. Types of packaging design 33. Types and additives of plastics |