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| **Title** of the subject: **Packaging technology, MTMEL7030A** | **ECTS Credit Points: 3** |
| **Type** of the subject: compulsory / **optional** |
| **Ratio of theory and practice: 2/0** (credit%) |
| **Type and number of classes per semester**: 2 hour(s) lecture and 0 hour(s) practice per **semester** Number of teaching hours per week : 2 lectures + 0 seminar |
| **Type of exam**: **exam** / practical course mark |
| **Subject in the curriculum:** **semester 2** |
| 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 knowledge. The quality of the packaging and reliability. Packaging machines and devices, packaging environmental impact of materials, re-processability. Food and packaging interaction (diffusion and migration). The food commodity marking (labeling). Mandatory and voluntary labeling (use of information and advertising).1. Packing elements (basic concepts, aims and tasks of the pack)
2. Packaging Training (consumer and multipack packaging)
3. Paper (sachets, bags, sacks, carton boxes)
4. Metal packaging products (coated and zinc plated steel plate, aluminum foil, trays, tubes and barrels)
5. plastics-based packaging products (hermoplastics and hardening plastics films,

plates, boxes, hollow objects) 1. Glass containers (narrow and wide-mouth jars and closing their methods)
2. Wood packing materials
3. Textiles packing materials
4. Combined packaging supplies
5. Vacuum and modified atmosphere packaging
6. Dangerous goods packaging
7. Cargo handling markings, signs
8. Packaging and the environment protection
9. The food and packaging materials interaction
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| **Summary of content - practice**: |
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| **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.
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| **Competencies gained** *(acc. to the Regulation on training and outcome requirements)* |
| 1. **Knowledge:**
* They have to know the basic principles of laboratory examination for the food technology and food safety analysis.
1. **Skills:**
* They have to have the ability to learn laboratory techniques, taking into account the environmental and health protection standards, and applying new methods in the whole area of food production.
1. **Attitude:**
* They have to be receptive to learn the needed theory, in order to understand, how the equipments and tools, used in food industry, function.
1. **Autonomy and responsibility:**
* They should be able to take the responsibility for 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. Written exam (minimum marks when percentage is 60%)
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| **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 dengerous goods? + Classification of dengerous 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 for 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 for 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
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