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| **Title and Code** of the subject**: Food chemistry, MTBE7014A** | **ECTS Credit Points: 3** |
| **Type** of the subject: compulsory / optional | |
| **Ratio of theory and practice: 66 / 33** (credit%) | |
| **Type and number of classes per semester**: 28 hour(s) lecture and 14 hour(s) practice per **semester**  Number of teaching hours / week : 2 + 1 (lecture and practice) | |
| **Type of exam**: exam / practical course mark | |
| **Subject in the curriculum:** semester III | |
| Preliminary requirements:- | |

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| **Summary of content - theory**: |
| Course objectives:  This course provides an advanced knowledge for the audience and the opportunity to get to know the food components. Students get acquainted with the transformation processes taking place in foodstuffs during storage and heat-treatment. They become familiar with the importance of additives and problems connected to them.  **Schedule:**   1. Water and Minerals 2. Introduction to Inorganic food analysis 3. Carbohydrates I. 4. Carbohydrates II. 5. Amino Acids and Protein I 6. Amino Acids and Protein II. 7. Lipids I 8. Lipids II. 9. Food Contamination and Safety 10. Vitamins and Organic analysis 11. Food Additives 12. Food Flavoring 13. Food Preservation 14. Summary and exam |
| **Summary of content - practice**: |
| Skills to be learnt:  The practice related to the actual topic of the lecture. Students learn to carry out complex tasks and literature search in food chemistry topic.  **Schedule:**   1. Problem solving and tasks in water and minerals topic 2. Demonstration of the Inorganic food analysis 3. First test 4. Problem solving and tasks in carbohydrates topic 5. Second test 6. Problem solving and tasks in amino acids and protein topic 7. Third test 8. Problem solving and tasks in lipids topic 9. Fourth test 10. Problem solving and tasks in food contamination and vitamins topic 11. Fifth test 12. Problem solving and tasks in food additives and food flavoring topic 13. Demonstartion in food preservation topic 14. Presentation of the students |
| **Literature, handbooks in English** |
| 1. Belitz, H.-D.,Grosch, Werner, Schieberle, Peter : Food chemistry, 2009 ISBN 978-3-540-69934-7 2. John M. de Man: Principles of Food Chemistry Springer, 1995. |
| **Competencies gained** *(acc. to the Regulation on training and outcome requirements)* |
| 1. **Knowledge:**  * The student knows and applies scientific theory and practice in the field of food chemistry * The student has acquired the comprehensive knowledge of food additives and food preservation  1. **Skills:**  * The student is capable to apply his/her acquired general and specific principles, rules, interrelations, procedures of natural sciences to solving food treatment and preservation problems. * The student is able to solve complex problems in the field of food chemistry  1. **Attitude:**  * The student will endeavour to develop both his/her own and his/her colleagues knowledge through continuous trainings. * The student is determined to work at a high professional level and he/she endeavours to convey this approach to his/her colleagues too.  1. **Autonomy and responsibility:**  * The student will take a pro-active role in solving food processing and preservation problems, he/she will identify the faults of the applied technology, the risks of the processes and will initiate the actions to reduce them. * The student will respect his/her subordinated colleagues’ efforts, he/she will promote his/her professional development sharing with them his/her critical remarks, he/she will raise his colleagues and subordinates to responsible and moral professional work. |

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| **Responsible lecturer: Áron Béni, PhD** |

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| **Terms of course completion:** |
| 1. Completing assignments and exercises 2. Giving presentation 3. Write all the test and each test has at least 50% score 4. Take the exam |
| **Form of examination:** |
| Written end-term test. |
| **Requirement(s) to get signature:** |
| Attendance at lectures is recommended, but not compulsory.  Participation at practice is compulsory. Students must attend the practice classes and may not miss more than three times during the semester. In case a student does so, the subject will not be signed and the student must repeat the course. Attendance at practice classes will be recorded by the practice leader. Being late is counted as an absence. In case of further absences, a medical certificate needs to be presented. Missed practices should be made up for at a later date, being discussed with the tutor. Active participation is evaluated by the teacher. If a student’s behavior or conduct doesn’t meet the requirements of active participation, the teacher may evaluate his/her participation as an absence because of the lack of active participation in class.  Write 5 assignments, and every assignment must be done in time. The plagiarism is not acceptable!  On a selected subject, students must give a Power Point presentation on the seminar. (20 minutes)  During the semester there are 5 mid-term tests, students have to sit for the tests. If the score of the mid-term tests is below 50%, the student can take a retake test once. If the all tests are above 50% the student can take the exam.  The minimum requirement of the mid-term and end-term test is 50%.  Based on the score of the tests separately, the grade for the tests is given according to the following table:  Score Grade  0-49 fail (1)  50-59 pass (2)  60-69 satisfactory (3)  70-79 good (4)  80-100 excellent (5)  If the score of the exam test is below 50, students can take a retake test in conformity with the EDUCATION AND EXAMINATION RULES AND REGULATIONS.  The course ends with a final grade, which will be calculated with the average of the mid-term test and exam result. |

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| **Exam questions:** |
| 1. Define Water activity. How can you determine water activity? 2. Write the classification of minerals and their physiological role. 3. Write about carbohydrate food additives and theMaillard reactions 4. What are sugar alcohols? Give an example of a sugar alcohol and name one food product it is commonly used in. 5. Briefly describe Amino acids. Peptide, Proteins 6. Categorize fatty acids. What is LDL and HDL? 7. Describe the oxidation of lipids. 8. Explain that what is the difference between selective and nonselective hydrogenation. What are the key processing conditions and corresponding oil characteristics of each method? 9. Categorize the food contaminants. How can food poisoning be prevented? 10. What is the source of food contamination? 11. Write about the sources and use of tocopherols as antioxidants in foods. 12. Briefly write down the differences between Vitamin A and Carotenes 13. Flavors can be classified into three types. State the three types of flavors? 14. List the main functions of Food Additives? |