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| **Title and code** of the subject: **Food chain safety, MTMKG7010A** | **ECTS Credit Points: 3** |
| **Type** of the subject: compulsory  |
| **Ratio of theory and practice:** (credit%) **70/30** |
| **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**: practical course mark |
| **Subject in the curriculum:** semester 2 |
| Preliminary requirements:- |

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| **Summary of content - theory**:  |
| Course objectives: The main aim of the lectures is to introduce the physical, chemical and biological/microbiological hazards which have important effects on food chain safety. In this semester, students will learn the methodology of risk analysis (mainly risk assessment) and the methodology of the determination of safe human dose, tolerable intakes and other toxicological values. Students will learn the methodology of hazard analysis and the preparation of HACCP plans.1. Influencing factors of food chain safety
2. 178/2002/EC; 852/2004/EC and 853/2004/EC regulations
3. Introduction to toxicology
4. Methodology of calculation of SHD, TDI, RfD, etc.
5. Chemical hazards
6. Microbiological hazards
7. Foodborne diseases
8. Introduction to risk analysis; Preliminary risk management activities
9. Risk management and risk communication
10. Methodology of HACCP plan preparation
11. Hazard analysis of plant origin food production (bakery products)
12. Hazard analysis of plant origin food production (quick-frozen and can products)
13. Hazard analysis of animal origin food production (dairy products)
14. Hazard analysis of animal origin food production (meat products)
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| **Summary of content - practice**: |
| Skills to be learnt: The main aim of the practices is to expand the lecture’s knowledge with example tasks and case studies. Therefore the students explore case-studies and make exercises which help them to develop their abilities for the assessment of risks and hazards and for exposure assessment.  1. Environmental pollutants as influencing factors of food chain safety
2. RASFF system and INFOSAN
3. Bioconcentration in environmental elements
4. Environmental health chain
5. Calculation of safe human dose
6. Dose-response relationship and curve
7. Human exposure assessment (ingestion and inhalation)
8. Risk estimation
9. Risk assessment
10. Flow chart in HACCP plan
11. Hazard identification in HACCP plan
12. Determination of CPs and CCPs in HACCP plan
13. Hazard analysis in HACCP plan
14. Monitor control and corrective actions in HACCP plan
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| **Literature, handbooks in English**  |
| 1. IPCS (2010): WHO human health risk assessment toolkit: chemical hazards. ISBN: 978-92-4-154807-6
2. 2016/C 278/01 EU Commission notice on the implementation of food safety management systems covering prerequisite programs (PRPs) and procedures based on the HACCP principles, including the facilitation/flexibility of the implementation in certain food businesses
3. Codex Alimentarius Commission: Food hygiene. Basic texts. (http://www.fao.org/docrep/012/a1552e/a1552e00.pdf)
4. Regulations, directives, standards
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| **Competencies gained** *(acc. to the Regulation on training and outcome requirements)* |
| 1. **Knowledge:**
* Students will gain the knowledge and skills required for hazard and risk assessment related to animal origin food and veterinary drugs
* Students will gain the knowledge and skills required for human exposure assessment
1. **Skills:**
* Students will be able to apply the tools of risk assessment
* Students will be able to characterise hazards and determine risks related to food safety
1. **Attitude:**
* Students will be endeavoured to apply the newest scientific results
1. **Autonomy and responsibility:**
* Students shall be able to feel responsible for safe food production
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| **Responsible lecturer: Dr: Nikolett Czipa, associate professor**  |
| **Other lecturer(s): Andrea Kántor, PhD student; Loránd Alexa, PhD student** |

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| **Terms of course completion:** |
| 1. Completing exercises
2. Giving presentation
3. Successful test
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| **Form of examination:** |
| Test |
| **Requirement(s) to get signature:** |
| Successful test (60%) and participation in practices |

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| **Test questions:** |
| 1. Definition of food safety and food chain safety
2. Influencing factors of food chain safety
3. Environmental pollutants as influencing factors of food chain safety
4. Activity of RASFF system
5. Types of RASFF notifications
6. Characterisation of vulnerable groups
7. Characterisation of chemical hazards and diseases
8. Characterisation of foodborne diseases caused by bacteria
9. Characterisation of foodborne diseases caused by parasites
10. Influencing factors of toxicity
11. Characterisation of dose-response relationship
12. Characterisation of exposure models
13. Human exposure assessment
14. Determination of safe human dose
15. Preliminary risk management activities
16. Methodology of risk assessment
17. Four steps of risk assessment
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