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| **Title** of the subject: **Environmental management MTB7015A** | **ECTS Credit Points: 3**  |
| **Type** of the subject: compulsory / optional |
| **Ratio of theory and practice: 100/0** (credit%) |
| **Type and number of classes per semester**: 28 hour(s) lecture and 0 hour(s) practice per **semester****Number of teaching hours / week:** 2 hours lecture per week  |
| **Type of exam**: exam / practical course mark |
| **Subject in the curriculum:** 2nd semester |
| Preliminary requirements:- |

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| **Summary of content - theory**:  |
| **Schedule:**1. Definition of environment, environmental protection, environmental management, environmental pollution. Classification of environmental elements. Characteristics and major types of systems. The concept of model and modelling, the characteristics of the model. Principles of environmental protection.
2. Concept and classification of natural resources. Biogeochemical cycles (Carbon-, Nitrogen-, Oxygen- cycle).
3. The impact of societies on the environment (agricultural societies, urbanization, technological advances, their negative environmental effects).
4. International environmental protection is organized. Overview of major environmental conferences. Concept of sustainable development.
5. Global problems (war and peace, overpopulation, food crisis, material and energy crisis, environmental crisis).
6. Global environmental problems in details
7. Pollution of the environment, classification of pollutants, types and causes of pollution
8. Soil protection. The concept of soil, its functions. The concept of soil degradation, its causes, factors preventing soil fertility. Sources of soil contamination. Heavy metal and oil pollution of soils. Remediation technologies, phytoremediation. Self-cleaning of soils.
9. The concept, structure and composition of the atmosphere. Thinning of the ozone layer, greenhouse effect, odorous substances in the atmosphere, air pollution caused by landfills. Atmospheric aerosols. Smog grouping, characteristics. Self-cleaning of the air. x
10. Basics of water protection, Classic water rating, Collection and treatment of communal wastewater, placement of by-product
11. The effects of agricultural production. Erosion, deflation, salinization, acidification. Effects of crop production and animal husbandry on soil, water and air
12. Definition of waste, waste management and classification of waste
13. The causes of radioactive contamination. Effects of radioactive contamination on humans, flora and fauna
14. Characteristics and propagation of noise and sound. Noise protection laws, load limits. Noise measurement. Effects of noise on humans. Methods of noise reduction.
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| **Summary of content - practice**: There are no related practices to this course |
| **Literature, handbooks in English**  |
| 1. J. C. Lovett- D. G. Ockwell.: 2010. A Handbook of Environmental Management.
2. J.M. Blais, M. Rosen, J.P. Smol.: 2015. Environmental Contaminants.
3. A. S. Kalamdhad, J. Singh, K. Dhamodharan.: 2016. Advances in Waste Management.
4. V. I. Grover.: 2006. Water: Global Common and Global Problems.
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| **Competencies gained** *(acc. to the Regulation on training and outcome requirements)* |
| 1. **Knowledge:**
* The student is in possession of knowledge of the environmental pollution problems and the identification of them.
1. **Ability:**
* Able to comply with environmental and health regulations to perform laboratory,semi-operational, and operational tasks
1. **Attitude:**
* Involving others' opinions on sectoral, regional, national and European values
* Committed to Food Quality, Safety, and Environmentally Friendly Solutions for Individual and Society Health
1. **Autonomy and responsibility:**
* Responsibility for its professional, legal, ethical norms and rules related to its work and behavior
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| **Responsible lecturer: Attila Nagy, Phd. assoc prof.** |
| **Terms of course completion:** |
| 1. Active participation in the lessons
2. Submitting report at the end of the semester
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| **Form of examination:** |
| Written exam  |
| **Requirement(s) to get signature:** |
| Attendance at lectures is recommended, but not compulsory. A report, including the overall assessment of soil/water/air /waste problems in the country the student lives in. 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.  |
| **Requirement(s) to get a grade:** |
| There is a possibility to take a preliminary exam at the last week of the teching period in a semester. The preliminary exam is optional. The grade of preliminary exam above satisfactory (3) will be written into the NEPTUN as an offered grade, which can be accepted or denied by the students.There are also exams in the examination period for students who didn’t attended the preliminary exam, or denied the offered grade. In general: the grade for the exams is given according to the following table:ScoreGrade0-50% fail (1) 50-62,5 % pass (2)62,5-75 % satisfactory (3)75-87,5 % good (4)87,5-100% excellent (5) |
| **Exam questions:** |
| 1. Specify the definition and the types of drought
2. List and shortly describe the basic principles of sustainable management
3. Describe the definitions of environment, environmental management
4. Describe the definitions of natural resources, natural resources management
5. Describe the definitions of renewable and non renewable resources
6. Definition of soil pollution; describe point and non-point source pollutions
7. List the main soil pollutants
8. List and shortly describe the global environmental problems.
9. Describe the causes, results and the process of global warming
10. Describe the causes, results and the process of the depletion of the ozone shield
11. Describe the structure of the atmosphere
12. List and describe the types of smog
13. Describe wet and dry depositions and their effects on environment
14. Functions and objectives of water management
15. Describe Water-resources management
16. Describe the water cycle.
17. The general characterization of water uses
18. Describe the steps of the waste water treatment
19. Describe the steps of the waste water treatment
20. Describe the hierarchy of waste management
21. Categories of food wastes
22. Determine of the waste quality parameters
23. Describe One and Two stroke collection systems
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