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| Name of course: **Organic matter management in soil** | **Credit value: 3** |
| **Course** **classification**: optional | |
| **The proportion of the practical nature of the course, „educational character”: 50-50%** | |
| **Type of course: 14** theoretical / **14** practical, and the **total number: 28 hours** in the given **semester.**  Further (unique) means and properties of knowledge transfer: - | |
| **Exam** type (colloquium / practical grade / **other** ): practical grade  Further (unique) means of knowledge verification**: ­** | |
| The curricular **place of the course** (which semester): 2 | |
| Prerequisites (if any):  **­** | |

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| **Course description: a brief, but informative description of the knowledge to be acquired (14 weeks).** |
| Course objectives:  Knowledge of factors influencing the condition of soils. Factors affecting soil heat, water and air management. Relationship between tillage, soil improvement and soil structure. The effect of plant residues (straw, stems) on the development of soil life and the indirect nutrient supply of plants. Significance of barn fertilization and its effect on soil life, soil fertility. Professional requirements for barn fertilization. Manure treatment methods. Evaluation of different organic fertilizers.  Requirements and rules for the application of green manure and slurry. Factors influencing soil fertility. The role of organic matter in the development of the nutrient balance. The importance of organic farming in sustainable, developing crop production.  Thematic of subject  1. Climatic and edaphic endowment and evaluation and analysis of Hungary.  2. Mineral and organic nutrient content and most important characteristics of soils.  3. Factors influencing soil mineralization and humification. Types and characteristics of humus.  4. Impact of climate change on soil life and soil fertility.  5- Classification of organic matters in the soil and its characteristics. Their effect on the soil - plant relationship.  6. Effect of crop production on the soil structure and fertility.  7. Consequences of crop rotation, the effect of fixities on the soil.  8. The effect of crop rotation on changes in soil water and nutrient reserves.  9. Effect of by-products (stem, root) on soil organic matter stocks.  10. Expected amount of manure and their nutrient content in relation to livestock and technology.  11. Manure treatment methods and their major features.  12. Practical issues and requirements for barn fertilization.  13. Practice of green manure fertilization.  14. The impact of organic farming on sustainable, scalable crop production, soil life and long-term soil fertility. |
| **Required and recommended reading:** |
| **Required reading:**   * Loch J., Nosticzius Á. szerk. 2004. Agrokémia és növényvédelemi kémia. Mezőgazda Kiadó, Budapest. (ISBN: 963-286-053-5) 407. p. * Sárdi K. 2011. Tápanyaggazdálkodás. http://www.tankonyvtar.hu/hu/ * tartalom/tamop425/0010\_1A\_Book\_04\_Tapanyaggazdalkodas/ch06s02.html * Harald Kosegarten, Thomas Appel. 2012. Principles of Plant Nutrition. Springer Science & Business Media (ISBN: 9401010099) 849. p. * Horst Marschner: 2012. Marschner's Mineral Nutrition of Higher Plants. (ed.: Petra) Academic Press, (ISBN: 9780123849052) 651. p.   **Recommended reading:**   * Allen V. Barker, David J. Pilbeam: 2016. Handbook of Plant Nutrition. CRC Press. (ISBN: 9781420014877) 632 p. |
| **Competencies to be acquired, related to the course:** |
| **a) Knowledge:**  - Students know and understand the principles of protecting the natural environment, and know the environmental, nature protection, hygiene, food safety, food health and occupational safety regulations related to crop production.  - Knows the specific research methods and abstraction techniques of plant cultivation, the ways of elaborating the practical aspects of the theoretical issues.  **b) Ability:**  - Able to analyze the activities and practical problems of the nutrient management and crop production with scientific scientific methods.  - Able to express opinions in written and oral form and participate in discussions on issues related to plant production, nutrient supply and soil fertility hat a high level in Hungarian and in a foreign language.  **c) Attitude:**  - Recognizes values of nature and receptive to the use of crop production and fertilization methods and tools that have effective solutions to maintain the soil fertility.  **-** Student is open-minded, proactive, empathetic and thoughtful and subordinates his opinion to professional aspects.  **d) Autonomy and responsibility:**  - Student is equal partner in professional cooperation.  - Able to independent and environmental friendly crop production and nutrient supply, able to apply and develop modern agricultural technologies related to crop production and fertilization. |

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| **Course leader** (name, post, academic degree): **Dr. Éva Babett Ábrahám assistant professor, PhD** |
| **Other lecturer(s) involved in teaching the course, if any** (name, post, academic degree): **-** |