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| Name of course: **Nutrient supply of field crops** | **Credit value: 3** |
| **Course** **classification**: obligatory | |
| **The proportion of the practical nature of the course, „educational character”:** 50-50 (credit%) | |
| **Type of course:** 14hours theoretical / 14 hours 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): 3. | |
| Prerequisites (if any): **-** | |

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| **Course description: a brief, but informative description of the knowledge to be acquired (14 weeks).** |
| Current evaluation and development opportunities of nutrient management. Skill level acquisition of soil - plant - yield and quality interactions. The importance and change of soil fertility in sustainable, developable nutrient management. The role and impact of climatic factors on the efficiency of nutrient management. Importance of biological bases in nutrient utilization.   1. The purpose, task and event of fertilization. 2. Evaluation of fertilization in Hungary. 3. Analysis of the most important weather (climatic) factors in Hungary. 4. The most important characteristics of NPK fertilizers. 5. Criteria and symptoms of the significance, effect and lack of N-P-K, Mg, Ca, Zn Mn, Cu, Mo, B, Fe and other nutrients. 6. Arguments and counter-arguments related to NPK fertilization. Beneficial effects of NPK fertilization. 7. The effect of NPK and Mg + Ca nutrients on the plant, soil and environment. 8. The effect of crop rotation on nutrient demand. Soils are the effect of their natural nutrient content, mineral and organic content on nutrient dynamism. 9. Important microelements and their importance in crop production. 10. The most important aspects of plant fertilization planning. 11. Methods for determining the optimal fertilizer dose. 12. Organic fertilizers, barn fertilization. 13. Green fertilization. 14. Organic and fertilizing machines |
| **Required and recommended reading:** |
| **Required reading:**  Allen V. Barker, David J. Pilbeam: 2016. Handbook of Plant Nutrition. CRC Press. (ISBN: 9781420014877) 632 p.  **Recommended reading:**   * 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. |
| **Competencies to be acquired, related to the course:** |
| **a) Knowledge:**  - Understands the reasons for connecting crop production to related disciplines, understands and systematizes the connections  - She/he knows in detail the connections between crop production and food chain safety.  **b) Ability:**  - Able to orientate and form a professionally grounded opinion in domestic and international economic policy and social events and phenomena related to crop production and agriculture.  - Ability to use state-of-the-art information technology tools to implement professional, effective oral and written communication.  **c) Attitude:**  - Her/his professional interest has deepened and solidified.  - It is important for her/him to adhere to the ethical rules and norms of scientific research.  **d) Autonomy and responsibility:**  - Has autonomy as to the way in which crop production activities are carried out.  - Able to manage independently, with an environmental approach, to apply and develop modern agricultural technologies related to crop production. |

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