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| Name of course: **Agroecological systems** | **Credit value: 3** |
| **Course** **classification**: optional | |
| **The proportion of the practical nature of the course, „educational character”: 50-50%.** | |
| **Type of course:** theoretical / practical, and the **total number: 1+1 hours** in the given **semester.**  Further (unique) means and properties of knowledge transfer: | |
| **Exam** type (colloquium / practical grade / **other** ):  **colloquium**  Further (unique) means of knowledge verification**:** | |
| The curricular **place of the course** (which semester): 1 | |
| Prerequisites (if any): **-** | |

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| **Course description: a brief, but informative description of the knowledge to be acquired (14 weeks).** |
| The aim of the course is to describe the structure of ecosystems, the interaction of individual elements, the elements of agricultural production habitat, the interactive relationship between agricultural production and environmental factors, the effects of climate change on agricultural production, the exploration of material and energy turnover in agroecological systems, principles of sustainable agriculture and possibilities of its implementation at different levels of cultivation technologies.  Subject topics:  Week 1: Structure of ecological systems, the importance of individual ecological elements in agriculture.  Week 2: Cycles in ecosystems, interactions between populations and their role in agricultural production.  Week 3: Stability and resilience of agro-ecosystems.  Week 4: The cycle of the elements in the crop space.  Week 5: Factors influencing the water supply, characteristics of soil water management, impact on the crop production area. Regularities and characteristic parameters of evaporation processes.  Week 6: The effect of tillage on the ecological parameters of the crop production area.  Week 7: Effects of crop rotation, species and variety use on the ecological parameters of the crop production area  Week 8: The effect of the nutrient supply system, the forms of fertilization on the ecological parameters of the crop production area.  Week 9: Effect of irrigation types on ecological parameters of crop production area.  Week 10: Interactions between different levels of cultivation technology models and crop production space .  Week 11: Types and characteristics of sustainable, environmentally friendly agrotechnical systems.  Week 12: The effects of climate change on agricultural production, the possibilities of adaptation.  Week 13: Opportunities to maintain and increase soil fertility.  Week 14: Preservation of the balance of agroecological systems, possibilities of its restoration. |
| **Required and recommended reading:** |
| **Required reading:**  Stephen R. Gliessman (2015). Agroecology - The Ecology of Sustainable Food Systems, Third Edition, ISBN 9781439895610, p. 406  Noureddine Benkeblia (2019). Agroecology, Ecosystems, and Sustainability  ISBN 9780367435981, p. 393  **Recommended reading:**  V. Ernesto Méndez, Christopher M. Bacon, Roseann Cohen, Stephen R. Gliessman (2016).  Agroecology - A Transdisciplinary, Participatory and Action-oriented Approach ISBN 9780367436018, p. 284    Stephen R. Gliessman - Eric Engles - Robin Krieger(1998). Agroecology: Ecological Processes in Sustainable Agriculture, ISBN 9781575040431 |
| **Competencies to be acquired, related to the course:** |
| **a) Knowledge:**  - Students know in detail the current requirements of the knowledge and activity system of crop production, the leading theories, the causal relations, the limitations of their application, and the terminology describing them.  **b) Ability:**  - Students are able to apply complex, new methods and techniques and technologies that can be used in crop production, just as they are able to identify special professional problems related to crop production, to explore and formulate the detailed theoretical and practical background needed to solve them.  **c) Attitude:**  - Students are open to learn about and practicing modern and innovative crop production methods.  **d) Autonomy and responsibility:**  -Students have autonomy as to the way in which crop production activities are carried out, they are able to manage independently, with an environmental-conscious approach, to apply and develop modern agricultural technologies related to crop production. |

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