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| **STUDY PROGRAMME:** | **Professional Graduate Study Programme *Agriculture* – *Sustainable and Organic Agriculture*** | |
| **Course:** | **SOIL ANALYSIS AND FERTILIZATION** | |
| **Course code: 273344**  **Course status:** elective | **Semester: III** | **ECTS credits: 4** |
| **Course holder:** | **Andrija Špoljar, Ph.D., professor of professional studies** | |
| **Course associates:** | Ivka Kvaternjak, Ph.D., professor of professional studies | |
| **Modes of delivery:** | **Number of hours** | |
| Lectures | 20 | |
| Excersises, | 20 | |

**COURSE OBJECTIVES:** The aim of the course is to create a professional report, recommend measures for arranging the production area and propose fertilization for the selected agricultural crop.

**COURSE CONTENT:**

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|  | **Course units** | | | **Modes of delivery:** | | **Places of delivery** | |
| L | E/S/ER |
| 1. | Introduction; Ways of taking soil and plant material samples | | | 2 |  | Lecture hall | |
| 2. | Taking samples of mineral and organic fertilizer | | | 2 |  | Lecture hall | |
| 3. | Preparation of soil and plant material samples for analysis | | | 2 |  | Lecture hall | |
| 4. | Analyzes of the basic properties of mineral fertilizers | | | 2 |  | Lecture hall | |
| 5. | Analyzes of the basic properties of organic fertilizers | | | 2 |  | Lecture hall | |
| 6. | Interpretation of analysis results | | | 2 |  | Lecture hall | |
| 7. | Introduction to soil analysis; Field pedological research | | | 2 |  | Lecture hall | |
| 8. | Laboratory analysis (physical and chemical properties of the soil) | | | 2 |  | Lecture hall | |
| 9. | Categories and parameters for monitoring agricultural soils in the Republic of Croatia | | | 2 |  | Lecture hall | |
| 10 | Categories and parameters for monitoring polluted soils in the Republic of Croatia | | | 2 |  | Lecture hall | |
| 11. | Calculation of the amount of mineral fertilizers for optimal nutrition of different crops | | |  | 5 | Field/laboratory | |
| 12. | Calculation of optimal fertilization with organic fertilizers and the required amount of material for calcification for different production conditions | | |  | 5 | Field/laboratory | |
| 13. | Physical characteristics of the soil (mechanical composition, soil water capacity, soil density, total porosity, soil air capacity, hydropedological calculations) | | |  | 5 | Field/laboratory | |
| 14. | Chemical features of the soil (amount of humus, soil adsorption complex, soil reaction, hydrolytic acidity) | | |  | 5 | Field/laboratory | |
|  | In total | | | **20** | **20** |  | |
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**L=Lectures, E=Excersises, S=Seminars, ER= Expert report**

**LEARNING OUTCOMES (LO)**

LO 1. Design a method of soil sampling and the necessary analysis for fertilization and recommend a methodology for permanent soil monitoring.

LO 2. Collect data from soil laboratory analyses

LO 3. Rank the results of laboratory soil analyses

LO 4. Valorize laboratory data

LO 5. Recommend the amount of necessary fertilizers according to the principles of sustainable and organic agriculture

LO 6. Create an expert report with recommendations for land management and fertilization

Course holder:

Andrija Špoljar, Ph.D., professor of professional studies

Križevci, July 2024