

Course Unit Descriptor

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|--|--------------------|--------------------------|--------|
| <b>Study Programme:</b> Agronomy   |                    |                          |        |
| <b>Course Unit Title:</b> Chemical Methods of Soil and Fertilizer Analysis   |                    |                          |        |
| <b>Course Unit Code:</b> ZDAI1019  |                    |                          |        |
| <b>Name of Lecturer(s):</b> Manojlović, S., Maja   |                    |                          |        |
| <b>Type and Level of Studies:</b> Doctoral studies   |                    |                          |        |
| <b>Course Status (compulsory/elective):</b> Elective   |                    |                          |        |
| <b>Semester (winter/summer):</b> Winter  |                    |                          |        |
| <b>Language of instruction:</b> English  |                    |                          |        |
| <b>Mode of course unit delivery (face-to-face/distance learning):</b>  |                    |                          |        |
| <b>Number of ECTS Allocated:</b> 10  |                    |                          |        |
| <b>Prerequisites:</b>  |                    |                          |        |
| <b>Course Aims:</b><br>Acquiring of advanced knowledge in the field of soil chemical analysis and analysis of fertilizers.   |                    |                          |        |
| <b>Learning Outcomes:</b><br>Students enabled to independently apply methods of soil and fertilizer analysis, which will enable them to apply the acquired knowledge in their scientific research work and in laboratories for analyzing the chemical properties of soil and fertilizer.   |                    |                          |        |
| <b>Syllabus:</b><br><i>Theory</i><br>Principles of soil and fertilizer analysis. Collection of soil and fertilizer samples and preparation of samples for analysis.<br><b>Chemical methods of soil and fertilizer testing:</b><br>- Absorption methods (colorimetry, spectrophotometry, atomic absorption spectrophotometry)<br>- Emission methods (flame photometry, induced coupled plasma)<br>- Potentiometric methods (EUF method)<br><i>Practice</i><br>Methods to determine the total content of the elements. Methods for determination of carbon and organic matter of the soil. Methods for determination of nitrogen forms. Determination of a potentially accessible fraction. Fractionation of phosphorus. Methods for determining trace elements. Analysis of organic and mineral fertilizers. Physical, chemical and biological methods for assessing the value of organic fertilizers and soil cultivators. Analytical methods for assessing substrate quality. |                    |                          |        |
| <b>Required Reading:</b><br>1. Soil Testing and Plant Analysis. SSSA Book Series: 3. Editor: R.L. Westerman. SSSA, Madison, USA, 1990.<br>2. Havlin J.L. et al. Soil fertility and fertilizers. Pearson education, Inc. Upper Saddle River, New Jersey 07458, 2005.<br>3. Faithfull, N.T. Methods in agricultural chemical analysis: a practical handbook, 2002.   |                    |                          |        |
| <b>Weekly Contact Hours:</b>   | <b>Lectures:</b> 4 | <b>Practical work:</b> 0 |        |
| <b>Teaching Methods:</b> Classes with the use of modern technology (computer, video beam). Laboratory studies.   |                    |                          |        |
| <b>Knowledge Assessment (maximum of 100 points):</b>   |                    |                          |        |
| <b>Pre-exam obligations</b>  | points             | <b>Final exam</b>        | points |
| Active class participation   |                    | written exam             |        |
| Practical work   |                    | oral exam                | 50     |
| Preliminary exam(s)  |                    | .....                    |        |
| Seminar(s)   | 50                 |                          |        |

