COURSE REGISTRATION FORM

Teacher	Dalibor Stojanović
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Course	Biological Aspects of Soil Fertility
Target	Agricultural Middle Schools
Type	blended
Duration	1 day - 8 hours

Description	The soil, i.e. pedosphere, represents one of the most endangered, most difficult to recover and most tender life channels. Constant growth of human population on the planet Earth progressively increases the need for quality food, which is why the conventional agriculture and urbanization are most common threats to soil quality. Production of the majority of sustaining food is inseparably connected to the cultivated land and to the sole characteristic of the soil - fertility. In addition to physical and chemical features of the soil, fertility mostly depends upon the biogenic components of the system, i.e. the qualitative and quantitative composition of the pedobionts. Main aim of this course is to expand the participants' knowledge of: characteristics and possibilities of improvement of soil fertility, process of pedogenesis, elementary groups of pedobionts, and of degradation problems and practical aspects of soil protection, all using the active learning method. Differences between the conventional use of soil and the use in organic agriculture will the main focus of this course.

Contents	1. Pedogenesis; fundamental pedogenetic processes; soil horizons 2. Physical and chemical properties of the soil; soil colloids 3. Pedobionts: classification and characteristics of the soil organisms 4. Extraction of the pedobionts from the substrates and their analysis 5. Conventional / organic agriculture – differences in soil farming and treatment

Objectives	1. Renewing, expanding and systemizing the basic knowledge of pedosphere, with particular interest in biogenic components. 2. Preparation of the participants for individual analysis of soil quality based on the quantitative and qualitative properties of the fauna. 3. Demonstration of the active learning system in the example of soil biology 4. Demonstration of the e-learning system in the *Moodle* learning platform

Activities	1. Introductory lecture - Introduction of the subject, course instructions, not longer than 15 minutes.

	2. Participants place the soil samples in the *Tullgren-Berlese* apparatus, they are being presented with the methods of causing and extraction which are all new to them. It is essential that this part of the course is performed immediately after the Introduction in order to execute the extraction of the soil organisms from the substrates during the lecture. 3. Execution of the main part of the course using the combination of the lecture and individual work of the participants: - presentation of the study units - using the *PowerPoint* presentation - participants read the given textual material and follow the video presentation, which thematically follows the *PowerPoint* presentation (individual work, use of *Moodle* platform) - knowledge testing using the quiz via the *Moodle* application (individually) - getting to know the key procedures in determination of fundamental pedobionic groups 4. Dividing the participants into groups and delegating the work within the given groups in order to analyze the material that was extracted from the samples (determination of the organisms, weighing the biomasses, estimation of the degree of soil pollution based on the results and data on composition and volume of organisms, all according to formal literature standards (group cooperation) 5. Group work 6. Group reports and intergroup discussion regarding the obtained results 7. Final exam - testing via the *Moodle* system, analysis of the new standardizes sample (artificially formed, with precisely determined amount and type of organisms, i.e. values needed for the typification of soil condition) according to standard and predetermined protocol.
Materials	1. *Tullgren-Berlese* aparatus (affordable and easy to be improvised with, made with extremely inexpensive parts such as: light bulb, funnel, plastic tube, colander and fixative jar) 2. Soil samples volume 20x20x20cm with three different types of surface and/or vegetation (e.g. silicate and limestone; off the meadow, forest, field ;…) 3. Binocular magnifying glass - for separation and determination of the organisms (number of magnifying glasses depends upon the number of participants - one glass on five participants, on average) 4. *Power Point* presentation 5. *Moodle* application 6. Printed material for organism determination and literature needed for the estimation of soil condition based on the determined organisms and their amount.