



COURSE REGISTRATION FORM

Teacher	Zorka Dulić
University	University of Belgrade, Faculty of Agriculture
Course	Water quality and bioindicators
Target	Agricultural Middle Schools
Type	online
Duration	2 days - 16 hours

Description	<p>Degradation of water ecosystems is currently one of the most significant types of environmental pollution. Agriculture is considered to be one of the main causes of surface and groundwater pollution.</p> <p>The issue of water pollution, causes and consequences of their neglect in Serbia, as well as possibilities for their rehabilitation has not received sufficient attention in schools and on studies at the Faculty of Agriculture. However, this is also a global problem that should not only be dealt with in schools. Raising awareness on the importance, but also the vulnerability of aquatic ecosystems as well as the sources of pollution, should be carried out at all levels of the society, in schools and through education of citizens and wider audience. Informing inhabitants of Serbian cities and rural areas with the current situation and possibilities for their involvement in monitoring and conservation of water resources could be one of the most effective ways in solving this environmental issue. The experience of European countries and the USA have witnessed success in this approach to environmental protection, and showed that the involvement of each individual in monitoring programs is of immense importance for the success of the program and preservation of water resources.</p> <p>This course will enable teachers to get insight into possible approaches to monitoring and protection of water resources in Serbia, regardless of their previous knowledge of these issues. In addition, transfer of knowledge from teachers to students is the most important step in raising the awareness of the problem, both at local and global levels. This way teachers and students have the opportunity to become an integral part of the campaign dealing with this important environmental issue.</p>
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Contents	<ol style="list-style-type: none">1. The concept of water quality, water quality parameters, values for different levels of degradation of aquatic ecosystems and sampling methods.2. Communities of aquatic organisms, their structure and ecology, and role as bio-indicators of water quality. Methods for sampling organisms.3. Types of monitoring programs of aquatic ecosystems
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Objectives	<ol style="list-style-type: none">1. Acquisition and improvement of knowledge on water quality, communities of
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aquatic organisms and their bio-indication properties, sampling methods, and sources of pollution.

2. Capability of creating a manual for voluntary assessment of the status of aquatic ecosystems, as well as integrated use of water quality parameters and environmental conditions necessary for optimal development of aquatic organisms.
3. Capability of applying acquired knowledge to other areas of environmental protection (terrestrial, air).

Activities

1. At the beginning of the course, participants take a short *Moodle* test to help the University teacher (UT) determine the level of their knowledge on water quality, indicator biocenosis and monitoring learned in previous education.
2. Based on test results, the UT divides participants into two groups: group without prior knowledge and group with some previous knowledge.
3. Each group of participants, depending on prior knowledge, gets *Moodle* access to certain materials - presentations (*ppt*) for reading and *Moodle* lessons for practicing. Furthermore, in the thematic parts, participants have available additional literature in the form of *pdf* texts, links and clips, as well as links to interactive keys for determination of aquatic animals.
4. After getting familiar with the literature, the UT divides participants again, but in smaller groups (two or three participants). Each group is given the task to make a basic manual that can be used to determine the state of a small local watercourse.
5. The manual should include: size of the investigated area, coordinates, type of habitat, potential contaminants (e.g. proximity to fields, farms or factories), equipment needed for a basic analysis of the ecological state of water, which equipment can be custom made or which equipment is owned by the school in which the teacher works that could be used for this research, and required personal protective equipment. The text of the manual should be submitted online, through the *Moodle* activity "submission of finalized manuals".
6. The following day, participant groups organize a trip to a small local watercourse: stream, river, lake, pond or canal and perform an inspection of the water quality using instructions from their manual.
7. Following completion of the task, the group analyzes their results and writes a report similar to an official report of agencies for environmental protection.
8. Time after that will be used for a mediated discussion on the results obtained and for drawing conclusions about the water quality, impact of pollution on the aquatic organisms, as well as the advantages and disadvantages of voluntary assessment of aquatic ecosystems using Skype conference call.

Materials

Given that this is an online course, material needed is a computer, *Skype* profile, computer camera and *Internet* connection.