

<b>Study program:</b> BIOLOGY				
<b>Type and level of studies:</b> Master academy study – II level of studies				
<b>Course unit:</b> BE202 – Soil and water microbiology				
<b>Teacher in charge :</b> Olgica D. Stefanović, Ph.D				
<b>Language of instruction:</b> English				
<b>ECTS:</b> 6				
<b>Prerequisites:</b> /				
<b>Semester:</b> Winter Semester				
<b>Course unit objective</b> The goal of this Course is to provide a knowledge for understanding the relationships between and role of microorganisms in ecological communities; to understand the distribution of microorganisms in soil, water; to understand the methods for determining the water and soil quality.				
<b>Learning outcomes of Course unit</b> After the completion of this Course students should understand the role and distributions of microorganisms in environment. Students will be able to interpret the methods used to examine the microbial quality of water and soil.				
Course unit contents Theoretical classes Role of bacteria in nature. Abiotic environmental factors. Biotic factors. The role of microorganisms in the biogeochemical cycling of elements. Microbial diversity. The soil habitat: water relationships, soil pores, diffusion, Introduction to Microbial Function and Diversity in Soil, Plant-microbe interactions; Rhizosphere, N <sub>2</sub> Fixation, Composting, Bioremediation, Distributions of microorganisms in freshwater ecosystems, Microbial communities of marine ecosystems, the microbiology of extreme environments, Molecular approaches for examining microbial community structure and function. Microbial aspects of water quality. Eutrophication. Microbial degradation of pollutants. Practical classes The effects of temperature, pH, osmotic pressure, oxygen on growth of bacteria. Interactions between microorganisms (antibiosis). Identification of different physiological bacteria groups from soil. Bacteriological indicators of condition and quality of water by applying direct methods (membrane filtration) and indirect methods. Colonna Winogradsky. Isolation of different physiological bacteria groups included in degradation of pollutants (hydrocarbons, phenols).				
Literature 1. Madigan, M.T., J.M. Martinko, D. Stahl, and D.P. Clark. 2010. Brock: Biology of Microorganisms (12th eds.), Prentice Hall. 2. Sigeo C. D. Freshwater microbiology. Wiley. 2005. 3. Eldor A. Paul. Soil Microbiology, Ecology and Biochemistry (4 <sup>TH</sup> ed.). 2014.				
<b>Number of active teaching hours</b>				<b>Other classes</b>
Lectures:	Practice:	Other forms of classes:  Mentoring (consultative) system	Independent work:	
<b>Teaching methods</b> Consultation, power-point presentations, laboratory practice				
<b>Examination methods ( maximum 100 points)</b>				
<b>Exam prerequisites</b>	<b>No. of points:</b>	<b>Final exam</b>	<b>No. of points:</b>	
Student's activity during lectures		oral examination	20	
practical classes		written examination	50	
Seminars	30			
Other				
<b>Grading system</b>				
<b>Grade</b>	<b>No. of points</b>	<b>Description</b>		
10	91 - 100	Excellent		

9	81 - 90	Exceptionally good
8	71 - 80	Very good
7	61 - 70	Good
6	51 - 60	Passing
5	< 50	Failing