

Study program: ECOLOGY				
Type and level of studies: Master academy study – II level of studies				
Course unit: E202 - Microbial ecology				
Teacher in charge : Ljiljana R. Čomić, Ph.D				
Language of instruction: English				
ECTS: 6				
Prerequisites: /				
Semester: Winter Semester				
Course unit objective 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 ecosystem; to understand the methods for determining the water and soil quality.				
Learning outcomes of Course unit 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 <i>Theoretical classes</i> Role of bacteria in nature. Abiotic environmental factors. Biotic factors. The role of microorganisms in the biogeochemical cycling of elements. Microbial diversity. Biofilms. Role and distributions of microorganisms in the soil. Microbial aspects of soil quality. Microbe-plant interactions. Biofertilizers. Role and distributions of microorganisms in the freshwater ecosystems. Role and distributions of microorganisms in the marine ecosystems. Microbial quality of drinking water. Microbial aspects of water quality. Eutrophication. Standards for soil and water quality. Microbial degradation of pollutants. Bioremediation. <i>Practical classes</i> 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. Sigeo C. D. Freshwater microbiology. Wiley. 2005. 2. Atlas R, Bartha R. Microbial ecology. Fundamentals and applications. The Benjamin/Cummings publishing company 3. Osborn M, Smith C. 2005. Molecular Microbial Ecology. Taylor & Francis Group				
Number of active teaching hours				Other classes
Lectures:	Practice:	Other forms of classes: Mentoring (consultative) system	Independent work:	
Teaching methods Consultation, power-point presentations, laboratory practice				
Examination methods (maximum 100 points)				
Exam prerequisites	No. of points:	Final exam	No. of points:	
Student's activity during lectures		oral examination	20	
practical classes		written examination	50	
Seminars	30			
Other				
Grading system				
Grade	No. of points	Description		
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