

(Table 5.2) Course unit description

Study program: BIOLOGY				
Type and level of studies: Master academy study – II level of studies				
Course unit: B201 – Soil and water microbiology				
Teacher in charge: Olgica D. Stefanović, 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 soil, water; to understand the methods for determining the water and soil quality.				
Learning outcomes of Course unit After the completion of this Course students will understand the role and distributions of microorganisms in environment. Students will be able to apply the methods used to examine the microbial quality of water and soil.				
Course unit contents <i>Theoretical classes:</i> 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 ₂ Fixation, Composting, Bioremediation, Distributions and microbial communities in freshwater ecosystems, Microbial communities in marine ecosystems, the microbiology of extreme environments, Molecular approaches for examining microbial community structure and function. Microbial aspects of water quality. Microbial degradation of pollutants. <i>Practical classes:</i> The effects of temperature, pH, osmotic pressure, oxygen on growth of bacteria. Interactions between microorganisms (antibiose). Identification of different physiological groups of bacteria. Bacteriological indicators of condition and quality of water by applying direct methods (membrane filtration) and indirect methods. Colonna Winogradsky. Isolation of pollutant-degrading bacteria.				
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 (4TH ed.). 2014. 4. Larry Barton. Environmental Microbiology and Microbial ecology, 2019 ISBN: 978-1-118-96626-6				
Number of active teaching hours				Other classes:
Lectures: 45	Practice: 20	Other forms of classes:	Independent work: 10	
Teaching methods: Consultation, power-point presentations, laboratory practice, student project				
Examination methods (maximum 100 points)				
Exam prerequisites	No. of points	Final exam	No. of points	
Practical classes	/	Written examination	50	

Tests	/	Oral examination	
Homework	/	Other	
Seminars	30		
Project	20		
Grading system			
Grade	No. of points		Description
10	≥ 91		Excellent
9	81-90		Exceptionally good
8	71-80		Very good
7	61-70		Good
6	51-60		Passing
5	≤ 50		Failing