

Study Programme: Master of Science in Biology			
Course Unit Title: Environmental Microbiology			
Course Unit Code: MB18			
Name of Lecturer(s): Dragan Radnović			
Type and Level of Studies: Master studies			
Course Status (compulsory/elective): Elective			
Semester (winter/summer): winter			
Language of instruction: English, Serbian			
Mode of course unit delivery (face-to-face/distance learning): face-to-face			
Number of ECTS Allocated: 7			
Prerequisites: -			
Course Aims: The aim of this course is to provide students understanding of: (1) the importance of microorganisms in different kind of environments (2) the methodologies used for the detection of their activities, (3) as well as the possible effects that microorganisms have on human activities			
Learning Outcomes: After successfully completed the pre-examination and examination commitments student will be able to: understand the mechanisms microorganisms use to obtain energy for growth and reproduction, and how these biochemical processes link with geochemical cycling, the geochemical roles and importance of heterotrophs and autotrophs, identify and enumerate bacteria in different environments, measure specific microbial activities in the environment, interpret geochemistry datasets, to identify the impact of microbial degradation of organic contaminants			
Syllabus: <i>Theory:</i> Theoretical classes includes the following units: (a) the importance and historical development of environmental microbiology, (b) an overview of basic microbiological concepts, (v) a description of the different microhabitats in the environment including soil, water, atmospheres and extreme habitats, (g) overview of the methodologies used for detection, enumeration identification of microorganisms and determination of their activities, (d) examination of communication between microorganisms, activities and interactions with the surrounding environment (f) the use of microorganisms for remediation organic and metal contaminants, description of important contaminants of water, soil and food as well as important indicator organisms (e) the role of microorganisms in urban areas ie. correlation of microorganisms and human populations. <i>Practice:</i> Laboratory practices include a variety of laboratory techniques for isolation, enumeration and estimation physiological activity of microorganisms isolated from diverse environments.			
Required Reading: Pepper, I. L., Gerba, C. P. & Gentry T. J. 2015. Environmental Microbiology. 3 ed. Academic Press Madsen, E.L. 2016. Environmental Microbiology: from genomes to biogeochemistry. Blackwell Publishing. Michael T. Madigan, John M. Martinko, Kelly S. Bender, Daniel H. Buckley, David A. Stahl, Thomas Brock (2015). Brock. Biology of microorganisms, 14th ed., Pearson SA. ISBN 0-321-89739-0, 978-0-321-89739-8 Čomić, Lj. (1999): Microbial ecology. Faculty of Science, University of Kragujevac, Serbia .ISBN 8681829335. Selected chapters.			
Weekly Contact Hours:	Lectures: 3	Practical work: 2	
Teaching Methods: lectures, practical work, consultations			
Knowledge Assessment (maximum of 100 points):			
Pre-exam obligations	points	Final exam	points
Active class participation	2	practical exam	
Practical work	18	oral exam	40
Colloquia	30	
Seminar(s)	10		
The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.			

