

Study program: Faculty of Environmental protection			
Type and level of study: Doctoral academic studies			
Course Title: SELECTED CHAPTERS IN REMEDIATION			
Teacher(s): Ljubinko Jovanović			
Status: ELECTIVE, IV semester			
ECTS: 15			
Prerequisite: None			
The goal of the course: Introduction to basic principles of bioremediation, importance for environment, possibilities for remediation of polluted soil and water.			
The outcome of the subject: Students will have knowledge about plant and microorganism role in bioremediation process. Understanding of plant and microorganisms adoption mechanisms of various pollutants. Performance of experiments, making hypothesis and results interpretation. Planning and performing bioremediation process in real conditions.			
Syllabus: <i>Theoretical study</i> Classical methods of soil and water remediation. Types of phytoremediation. Wild plants and microorganisms under natural conditions. Mechanisms of degradation and transport of pollutants in plants and microorganisms. Mechanisms of adoption of organic pollutants in plants and microorganisms. The role of microorganisms in biodegradation processes. Isolation and reproduction of indigenous microorganisms for use in bioremediation. Biofilters. Aquatic ecosystems. Using biomass from phytoremediation processes. Sustainable development and bioremediation. <i>Scientific research</i> Modeling different mechanisms adoption in plants and microorganisms, setting reflected in laboratory and field conditions.			
Literature: R.L. Crawford, D.L. Crawford, Bioremediation: principles and applications, Cambridge University Press, 1998. Larry L. Barton and Diana E. Northup MICROBIAL ECOLOGY 2011 by Wiley-Blackwell A.H. Varnam, M.G.Evans: Environmental Microbiology, 2000 L.M. Prescott, J.P. Harley, D.A. Klein: Microbiology, 1999 R.D. Reeves, A.J.M. Baker: Metal-accumulation plants. Phytoremediation of toxic metals, 2000 M.N.V. Prasad: Heavy metal stress in plant, 2004			
Number of lectures:			Other Classes
Lectures: 3	Practices:	Other forms of teaching:	Student research work: 7
Teaching methods: The theoretical part of the course is conducted in a university lecture halls, with the use of computer technology, processed and presented lectures. Research work is done in the form of field and laboratory work.			
Score for grading (maximal 100 points)			
Pre-commitments	Poens	The final exam	Poens
Activity during lectures	10	Written exam	
Scientific research	30	Oral examination	40
Colloquia			
Seminars	20		
<i>Total</i>	60		