

Course Unit Descriptor

Study Programme: MSc in Biology		
Course Unit Title: Microbial Biotechnology		
Course Unit Code: DBO14		
Name of Lecturer(s): Dr Zorica Svirčev		
Type and Level of Studies: Integrated studies		
Course Status (compulsory/elective): Elective		
Semester (winter/summer): Winter		
Language of instruction: English or Serbian		
Mode of course unit delivery (face-to-face/distance learning): face-to-face		
Number of ECTS Allocated: 6		
Prerequisites: none		
Course Aims: The goal of this course is to enable students to solve current problems of mankind in everyday life by finding solutions that already exist in nature or may be based on known natural laws derived in the laboratory due to metabolic activities of microorganisms.		
Learning Outcomes: After the completion of the course of Microbial Biotechnology students are expected to: create the tasks and solve the problems related to the biotechnology of microorganisms; show understanding of the structure and function of biotechnological processes in microorganisms; be able to recognize certain groups of biotechnological applications of microorganisms in various fields of medicine, agriculture, industry and ecology; work independently in biotechnological laboratory.		
Syllabus: <i>Theoretical part:</i> The groups of microorganisms in relation to biotechnological applications. Definition and properties of designed microorganisms. Production of biomass. Bioreactors. The general scheme of microbiological processes. Isolation and collection of microorganisms. Genetic engineering in biotechnology of microorganisms. The growth patterns of microorganisms. Production of primary and secondary metabolites. Possible application of different and specific groups of microorganisms in biotechnology: applied bacteriology, applied phycology, applied mycology and lichenology. <i>Practical part:</i> Isolation of autochthonous strains of microorganisms. Maintenance of culture collections of bacteria, microalgae, cyanobacteria and fungi. Screening of isolates with specific properties of interest in biotechnology: medicine, pharmacy, agriculture, environmental protection. Application of microorganisms in the production of beer - visit a local brewery.		
Required Reading: 1. Svirčev Z. (2005): Microalgae and Cyanobacteria in Biotechnology. Faculty of Sciences, University of N. Sad. 2. Pejin D. (2003): Industrial Microbiology. University of Novi Sad, Faculty of Technology. 3. Đukić D., Jemcević V. (2003): Microbial Biotechnology. Dereta, Beograd. 4. Kuburović M., Stanojević M. (1997): Biotechnology. Smeits, Beograd. 5) Prentice S. (1991): Biotechnology-New Industrial Revolution. School Book, Zagreb.		
Weekly Contact Hours: 3	Lectures: 2	Practical work: 1
Teaching Methods:		

Lectures, practical laboratory work in student groups			
Knowledge Assessment (maximum of 100 points):			
Pre-exam obligations	points	Final exam	points
Active class participation	5+5	written exam (practical)	10
Practical work		oral exam	40
Preliminary exam(s)	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.			