Study Program: Biology

Type and level of studies: Bachelor studies

Course name: Applied microbiology

Lecturer: Kiković D. Dragan

Status: Elective

ECTS: 5

Attendance Prerequisites:

Course aims

The students should learn about the application of microorganisms in industrial and agricultural production, the role of microorganisms in fermentation processes, microorganisms as a food source, the basis of industrial microbiology and biotechnology, the application of microorganisms in bioremediation, biodegradation and pest control.

Course outcome

The students have acquired basic knowledge and skills related to using microorganisms in industrial processes, applying microorganisms for removing organic and inorganic pollutants from natural environments, linking theoretical knowledge with concrete test results and a correct interpretation of results.

Course content

Theoretical part:

A review of the application of microorganisms and their enzymes in industry. Microbial growth processes. Microorganisms and fermentations. Growing conditions optimisation. Bioreactor. Biomonitoring. Microorganisms in bioremediation, biodegradation and pest control. Microbiological control. Examination of biological activities. Industrial microbiology and biotechnology. Microbial products.

Theoretical part:

Isolation and identification of pure microorganism cultures, their preservation, maintenance, multiplication to produce various microbial preparations, products and enzymes which require such cultures.

Literature

1. A. H. Varnam, M.G.Evans: Environmental Microbiology, 2000.
2. L. M. Prescott, J.P. Harley, D.A. Klein: Microbiology, 1999.
3. R. D. Reeves, A.J.M. Baker: Metal-accumulation plants. Phytoremediation of toxic metals, 2000.
4. M. N. V. Prasad: Heavy metal stress in plant, 2004.

Number of active classes				Other classes
Lectures: 2	Practical classes: 0	Other forms of teaching: 1	Students' research work	

Teaching methods

Lectures, video presentation, practical laboratory exercises.

Assessment (maximum 100 points)

Course assignments	**points**	Final exam	**points**
activity during lectures	**10**	written exam	
practical classes	**20**	oral exam	50
term test(s)	**20**		
Total	**50**		**50**