

Study Programme: Biotechnology		
Course Unit Title: Advances in Bioseparations Engineering		
Course Unit Code: M1BI2		
Name of Lecturer(s): Dr. Mirjana Antov, Full Professor		
Type and Level of Studies: Master academic studies		
Course Status (compulsory/elective): elective		
Semester (winter/summer): Winter		
Language of instruction: English		
Mode of course unit delivery (face-to-face/distance learning): Face-to-face		
Number of ECTS Allocated: 7		
Prerequisites: None		
<p>Course Aims:</p> <p>Course will enable students to gain advances in fundamental scientific and academic knowledge, capabilities and skills in both theory and practice of separation processes in bioengineering, competences in specific technological and engineering aspects of key prerequisites in isolation and purification of products from both laboratory and industrial scale in consistence with contemporary development in bioseparations science and engineering.</p>		
<p>Learning Outcomes:</p> <p>Broadened knowledge of both theory and practice of bioseparations science and engineering, deeper understanding of principles of selected bioseparations techniques and criteria of their choice, and improvement of skills and capabilities for scale-up procedures. Knowledge of principles of solving theoretical and real problems and its implementation in selected case studies.</p>		
<p>Syllabus:</p> <p><i>Theory</i></p> <p>Analysis of selected bioseparations techniques of high and the highest resolutions; analysis of equipment and its usage in bioseparations of various biological materials and molecules; analysis of organization of bioseparations train in consistence with characteristics of biotechnological processes and products; analysis of productivity and efficiency of bioseparations trains; scale-up in bioseparations.</p> <p><i>Practice</i></p> <p>Computing simulations and problems solving of study cases using software package. Presentation of students' seminar work.</p>		
<p>Required Reading:</p> <ol style="list-style-type: none"> 1. M. Antov: Aqueous two-phase sustems: principles of partitioning and application (in Serbia), Faculty of Technology, Novi Sad, 2006. 2. M.R. Ladisch: Bioseparation Engineering: Principles, Practice and Economics, Wiley, 2001. 3. M.C. Flickinger (Ed.): Downstream Industrial Biotechnology, Wiley, 2013. 4. Ullmann's Encyclopedia of Industrial Chemistry, Vol. 21, Wiley-VHC, 2003. 5. J.D. Seader: Separation Process Principles, Wiley, 2006. 		
Weekly Contact Hours: 6	Lectures: 3	Practical work: 3
Teaching Methods:		

Lectures, computing simulation and problems solving, students seminar work.

Knowledge Assessment (maximum of 100 points):

Pre-exam obligations	points	Final exam	points
Active class participation	5	written exam	-
Practical work	5	oral exam	30
Preliminary exam(s)	30	
Seminar(s)	30		

The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.