

COURSE DESCRIPTION (SYLLABUS)

1.	Course: Preparative Biochemistry
2.	Language of instruction: English
3.	Faculty: Faculty of Biotechnology
4.	Course/module code: 29-BT-S1-E5-PBeng
5.	Course/module type (<i>mandatory or elective</i>): mandatory
6.	Programme: Biotechnology
7.	Study cycle (<i>1st/2nd</i>): 1st cycle
8.	Year: 3rd
9.	Semester (<i>autumn or spring</i>): autumn
10.	Form of tuition and number of hours: Lecture: 15 h
11.	Coordinator(s): Mariusz Olczak, Prof.
12.	Initial requirements (<i>knowledge, skills, social competences</i>): Knowledge of structure and properties of biomacromolecules and biochemistry.
13.	Objectives: Student will learn protein purification techniques and be able to plan protein purification strategy.
14.	Content: <ul style="list-style-type: none"> • Choice of tissue (plant/animal) material and setup of extraction conditions. • Clarification and condensation of extracted material. • Basic techniques applied during protein and peptides purification (precipitation, fractionation, ion-exchange chromatography, hydrophobic chromatography, gel filtration, affinity chromatography, immuno-precipitation. HPLC and FPLC techniques; reverse phase chromatography (RP).

	<ul style="list-style-type: none"> • Purification of recombinant proteins. • Scaling up of purification process. 	
1.	<p>Learning outcomes:</p> <p>Student:</p> <ul style="list-style-type: none"> • makes a qualitative and quantitative description of the basic biological phenomena and processes necessary for protein purification; • knows and understands the importance of mathematical and statistical methods required for the description, interpretation of phenomena and processes, as well as biological experiments; • has knowledge of the basic techniques and research tools used in preparative biochemistry; • is able to link theoretical knowledge of biochemistry and biotechnology with its practical application; • reads and understands scientific literature in the field of biochemistry and biotechnology in English; • takes advantage of the online resources and literature to obtain information on preparative biochemistry; • recognizes the importance of knowledge and expert opinions in solving cognitive and practical problems; • understands the need for careful planning of tasks and scientific experiments. 	<p>Outcome symbols:</p> <p>K1_W01, K1_W02, K1_W06, K1_W08, K1_W09, K1_U03, K1_U04, K1_K02, K1_U03</p>
2.	<p>Obligatory and recommended literature:</p> <ul style="list-style-type: none"> • R. K. Scopes, 1987, <u>Protein Purification. Principles and Practice</u>. Springer-Verlag, New York; • R. Burgess, 1987, <u>Protein Purification. Micro to Macro</u>. Alan R. Liss. Inc. New York; • G.Piljac i V. Piljac, 1986, <u>Genetic Engineering. Liquid chromatography</u>. TIZ: Zrinski Calcovec. 	
3.	<p>Methods of verification of the assumed learning outcomes:</p> <p>written exam</p>	
4.	<p>Conditions of earning credits:</p> <p>positive exam result</p>	

5.	Student's workload:	
	Activity	Number of hours for the activity
	Hours of instruction (as stipulated in study programme): <ul style="list-style-type: none"> • lecture: 15 h • consultation: 5 h 	20 h
	Student's own work: <ul style="list-style-type: none"> • reading the literature; • preparation for the exam. 	45 h
	Total number of hours:	65 h
	Number of ECTS:	3 ECTS