COURSE DESCRIPTION (SYLLABUS)

1.	Course: **Protein Structure and Function**	
2.	Language of instruction: **English**	
3.	Faculty: **Faculty of Biotechnology**	
4.	Course/module code: **29-BT-S2-E1-EngP**	
5.	Course/module type (*mandatory* or *elective*): **mandatory**	
6.	Programme: **Medical Biotechnology**	
7.	Study cycle: **2nd cycle**	
8.	Year: **1st**	
9.	Semester *(autumn* or *spring)*: **Autumn**	
10.	Form of tuition and number of hours: **Lecture, 15 h**	
11.	Name, Surname, academic title: **Małgorzata Zakrzewska, Prof.**	
12.	Initial requirements (knowledge, skills, social competences) regarding the course/module and its completion **Knowledge in the field of biochemistry, biophysics, protein and carbohydrate metabolism, organic chemistry.**	
13.	Objectives **Understanding the relationship between the structure and function of proteins.**	
14.	Content **Protein structure, main functional types of proteins, amino acids, secondary, tertiary, quaternary structure, stabilizing interactions, hydrophobic effect, protein folding, protein-protein interactions, protein stability, structural and functional motifs, protein oligomerization, active centres, binding sites, protein flexibility and dynamics, fibrous proteins, catalysis, protein targeting and regulation mechanisms, molecular switches, control of protein function, covalent modifications, degradation, proteolysis and protein assembly, protein splicing, homologous sequences, sequence alignment, structural and functional motifs, experimental and computational methods of protein function analysis, chameleon sequences.**	
15.	Learning outcomes **Students should acquire:** **knowledge in:**	Outcome symbols

	• qualitative and quantitative description of complex biological phenomena and processes involving proteins; • protein biochemistry and biophysics; • molecular evolution and structural biology essential to understand the relationships in biological systems; • the current issues discussing in scientific literature in the field of protein structure and function. **<u>skills, including:</u>** • efficient use of scientific literature in the field of protein structure and function; • critical analysis and selection of information, especially from electronic resources, including literature and sequential databases; • ability to formulate legitimate opinions on the basis of data derived from different sources; • ability to prepare oral presentations concerning protein structure and function research, using a variety of different media. **<u>social competences:</u>** • understanding the need for lifelong learning in the field of protein structure and function; • understanding the need for a systematic review of professional literature in order to broaden and deepen their knowledge; • regular revising the knowledge in the field of protein structure and function and its practical applications.	K1_W01, K1_W03, K1_W04, K1_W05, K1_U02, K1_U03, K1_U07, K1_U08, K1_K01, K1_K05, K1_K07
16.	Recommended literature: • **JM. Berg, JL Tymoczko, L Stryer, Biochemistry, Palgrave Macmillan, 2011.** • **C Branden, J Tooze, Introduction to Protein Structure, Garland Publishing, 1999.** • **GA Petsko, D Ringe, Protein Structure and Function, New Science Press. 2008.**	
17.	Methods of verification of the assumed learning outcomes: **Oral exam**	
18.	Conditions of earning credits: **Oral exam, 15-minute presentation prepared by students on selected topics from the list provided by the lecturer.**	
19.	Student's workload:	
	Activity	Number of hours for the activity
	Hours of instruction (as stipulated in study programme):	**15 h**
	Student's own work:	**15 h**

	Total number of hours:	**30 h**
	Number of ECTS	**2 ECTS**