

SUBJECT/COURSE SYLLABUS

1.	<p>Course name in Polish and English</p> <p style="text-align: center;">Structure and Function of Biomolecules</p> <p>Struktura i funkcja biomolekuł</p>
2.	<p>Scientific discipline</p> <p>Medical sciences</p> <p>Biotechnology</p>
3.	<p>Language of instruction</p> <p>English</p>
4.	<p>Unit conducting the course</p> <p>Faculty of Biotechnology</p>
5.	<p>Type of course</p> <p>compulsory</p>
6.	<p>Field of study</p> <p>Biotechnology</p>
7.	<p>Level of study</p> <p>first-cycle</p>
8.	<p>Year of study</p> <p>1st</p>
9.	<p>Semester</p> <p>summer</p>
10.	<p>Course form and number of hours</p> <p>Laboratory, 60 h</p>
11.	<p>Prerequisites in terms of knowledge, skills and social competences for the course:</p> <ul style="list-style-type: none"> • knowledge of basic laboratory health and safety principles; • proficiency in performing basic biochemical calculations; • practical laboratory skills, including pipetting, weighing, and the operation of standard equipment (e.g., centrifuges and spectrophotometers).
12.	<p>Learning objectives for the course:</p> <p>The main objectives of the course are:</p> <ul style="list-style-type: none"> • to enable students to master the detection, identification, and qualitative or quantitative analysis of proteins, carbohydrates, lipids, and nucleic acids; • to provide students with the skills required to isolate specific classes of proteins, lipids, and nucleic acids from biological material;

	<ul style="list-style-type: none"> to develop the ability to independently and collaboratively conduct experiments, as well as to present, analyze, and interpret the resulting data. 	
13.	<p>Curriculum content:</p> <ul style="list-style-type: none"> methods for the detection, identification, and quantitative analysis of proteins, carbohydrates, lipids, and nucleic acids. initial isolation techniques for selected classes of proteins, lipids, and nucleic acids from diverse biological materials (e.g., serum, plant tissues, yeast cells). selected methods for their chromatographic and/or electrophoretic separation. 	
14.	<p>Description of learning outcomes</p> <p>Student:</p> <ul style="list-style-type: none"> describes the principles of detection, identification, and/or quantitative analysis of major biomolecules; explains the biochemical basis for the isolation of proteins, lipids, and nucleic acids from various biological sources; characterizes the theory behind chromatographic and electrophoretic separation techniques; performs qualitative and quantitative analyses of proteins, carbohydrates, lipids, and/or nucleic acids using standard laboratory protocols; executes initial isolation procedures to extract biomolecules from biological material; applies selected chromatographic or electrophoretic methods to separate and visualize biochemical compounds; documents experimental work, including the accurate presentation and critical interpretation of raw data; operates standard laboratory equipment safely and in accordance with health and safety (OHS) regulations; learns a given subject by her/himself, demonstrates the ability to work effectively both independently and as part of a team; maintains responsibility for shared laboratory equipment and the safety of the working environment. 	<p>Symbols for relevant directional learning outcomes:</p> <p>K1_W06 K1_W08</p> <p>K1_U01, K1_U05, K1_U12, K1_U13</p> <p>K1_W10</p> <p>K1_K03, K1_K05</p>

15.	<p>Mandatory literature:</p> <ul style="list-style-type: none"> • Lab manual; <p>Recommended literature:</p> <ul style="list-style-type: none"> • JM. Berg, JL Tymoczko, L. Stryer: Biochemistry, Macmillan, 2019. • R.H. Garrett, C.M. Grisham: Biochemistry, Thomson 2012. • D L. Nelson, M. M. Cox: Lehninger Principles of Biochemistry, Macmillan, 2017. 	
16.	<p>Methods of verification of the assumed learning outcomes:</p> <ul style="list-style-type: none"> • practical tasks (mandatory attendance); • written preliminary tests (entry tests); • written mid-term tests 	
17.	<p>Conditions and form of credit for individual components of the course:</p> <ul style="list-style-type: none"> • final assessment is based on the average grade obtained from preliminary and mid-term tests, lab reports, and student participation during class. 	
18.	Student workload expressed in teaching hours and ECTS credits	number of hours allocated for the course of a given type of classes
	classes (according to the study plan) with the instructor: <ul style="list-style-type: none"> • laboratory 	60 h
	student's own work (including participation in group work) e.g.: <ul style="list-style-type: none"> • ongoing preparation for class activities • preparation for the tests. 	60 h
	Total number of class hour	120 h
	Number of ECTS credits:	5 ECTS