COURSE DESCRIPTION (SYLLABUS)

1.	Course: **Metabolism of Proteins and Carbohydrates**
2.	Language of instruction: **English**
3.	Faculty: **Faculty of Biotechnology**
4.	Course/module code: **29-BT-S1-E3…** (the code will be set soon)
5.	Course/module type (*mandatory* or *elective*): **mandatory**
6.	Programme: **Biotechnology**
7.	Study cycle (*1st/2nd*): **1st cycle**
8.	Year: **2nd**
9.	Semester *(autumn* or *spring):* **autumn**
10.	Form of tuition and number of hours: Laboratory: **60 h** Learning methods: **Students are provided with manuals and report templates before classes and are expected to read and understand tasks and experiments to be performed on a given day as well as to realize how to present the results. The preparation for classes is verified with short pre-lab tests.** **Students perform experiments as a group of 4-6.**
11.	Coordinator(s): **Dorota Maszczak-Seneczko, PhD**
12.	Initial requirements *(knowledge, skills, social competences)*: • **knowledge of structure and function of biomacromolecules;** • **ability to carry out biochemical calculations;** • **ability to work in the laboratory (e.g. reagent and buffer preparation, usage of centrifuge and spectrophotometer),** • **knowledge of the rules of health and safety at biochemistry laboratory.**

13.	Objectives: **The objective of the course is to familiarize students with isolation, activity determination and initial characterization of enzymes engaged in protein and carbohydrate metabolism.**	
14.	Content: • **preparation of necessary reagents and buffers;** • **determination and calculation of enzymes' activity;** • **factors affecting enzymes' activity;** • **determination of kinetic parameters of enzyme-catalyzed reaction;** • **reversible enzyme inhibition;** • **early steps of protein purification;** • **purification of protein using chromatography methods;** • **determination of protein concentration;** • **purification summary table;** • **native- and SDS-PAGE.**	
15.	Learning outcomes: Student: • **makes a qualitative and quantitative description of an enzyme-catalyzed reaction;** • **has knowledge of terminology, techniques and methodology used in protein and carbohydrate biochemistry;** • **knows basic tools allowing for data analysis;** • **applies basic physical, chemical and biochemical techniques necessary for studying proteins and enzyme activity;** • **carries out simple experiments in the field of biochemistry, describes the results and presents them in the form of a report;** • **performs spectrophotometric measurements;** • **works as a part of team to solve problems, perform scientific experiments and prepare reports;** • **understands the need for careful planning of tasks and scientific experiments;** • **knows and follows the rules of health and safety at work.**	Outcome symbols: K1_W01 K1_W06, K1_W08 K1_W07 K1_U01 K1_U05 K1_U07 K1_U13 K1_K03 K1_K05
16.	Recommended literature: • **Berg JM, Tymoczko JL, Stryer L, *Biochemistry* 6th ed.2006** • **Nelson DL, Cox MM, *Lehninger Principles of Biochemistry* 5th ed.2008** • **Garrett RH, Grisham CM, *Biochemistry* 4th ed.2008**	

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- **Voet D, Voet JG, *Biochemistry* 4th ed.2011**
- **Mathews CK, Van Holde KE, Appling DR, Anthony-Cahill SJ, *Biochemistry* 4th ed., 2013.**
- **Specific instructions delivered by the coordinators of the respective modules.**

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<tr><td>17.</td><td colspan="2">Methods of verification of the assumed learning outcomes

- **pre-lab tests;**
- **evaluation of the student's work in the lab;**
- **written reports describing the performed experiments and obtained results;**
- **written tests.**

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<tr><td>18.</td><td colspan="2">Conditions of earning credits:

- **active participation in laboratory classes;**
- **proper preparation of written reports on the experiments performed;**
- **obtaining an average grade from pre-lab tests and written tests as indicated in the rules and regulations of the course.**

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<tr><td rowspan="5">19.</td><td colspan="2">Student's workload:</td></tr>
<tr><td>Activity</td><td>Number of hours for the activity</td></tr>
<tr><td>Hours of instruction (as stipulated in study programme) :

- laboratory classes and consultations

</td><td>60 h</td></tr>
<tr><td>Student's own work:

- studying before the classes;
- preparation of reports;
- preparation for the test.

</td><td>40 h</td></tr>
<tr><td>Total number of hours:</td><td>100 h</td></tr>
<tr><td>Number of ECTS:</td><td>4 ECTS</td></tr>
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