

## COURSE DESCRIPTION (SYLLABUS)

1.	Course:  <b style="text-align: center;">Enzymology</b>
2.	Language of instruction:  <b>English</b>
3.	Faculty:  <b>Faculty of Biotechnology</b>
4.	Course/module code:  <b>29-BT-S1-E6-EnEN</b>
5.	Course/module type ( <i>mandatory or elective</i> ):  <b>mandatory</b>
6.	Programme:  <b>Biotechnology</b>
7.	Study cycle ( <i>1st/2nd</i> )  <b>1st cycle</b>
8.	Year:  <b>3rd</b>
9.	Semester ( <i>autumn or spring</i> ):  <b>spring</b>
10.	Form of tuition and number of hours:  Lecture: <b>30 h</b>
11.	Coordinator(s):  <b>Anna Szlachcic, PhD</b>
12.	Initial requirements (knowledge, skills, social competences)  <b>General and analytical chemistry, physical methods in biology, structure, function and metabolism of proteins and sugars, mathematics, organic chemistry, biophysical chemistry. The student should demonstrate knowledge of chemistry calculations, mathematical analysis, foundations of the protein structure and organic chemistry.</b>
13.	Objectives:  <b>Objectives of education are: basic knowledge of enzyme kinetics, the parameters of the enzymatic reaction, mechanisms of action of enzymes and inhibitors, dependence on the temperature and pH of the enzymatic activity, knowledge of the structure of enzymes and amino acids that build active sites of enzymes.</b>
14.	Content:  <ul style="list-style-type: none"> <li>• <b>introduction to enzymology, catalysis, reaction rates;</b></li> <li>• <b>factors affecting enzyme activity;</b></li> </ul>

	<ul style="list-style-type: none"> <li>allosteric regulation of enzymes;</li> <li>enzyme-substrate binding equilibria;</li> <li>thermodynamics of enzymatic reactions;</li> <li>enzyme classification;</li> <li>enzyme inhibition;</li> <li>industrial applications of enzymes;</li> <li>clinical aspects of enzymes.</li> </ul>	
15.	<p>Learning outcomes:</p> <p>Student:</p> <ul style="list-style-type: none"> <li>can make a qualitative and quantitative description of the basic enzymatic phenomena and processes;</li> <li>knows and understands the importance of mathematical and statistical methods required for the description, interpretation of enzymatic phenomena and processes;</li> <li>knows the basic concepts, terms and techniques used in enzymology;</li> <li>acquires knowledge of the basic techniques and research tools used in enzymology;</li> <li>is able to link theoretical knowledge of enzymology with its practical application in industry, health care and environmental protection;</li> <li>reads and understands the scientific literature in the field of enzymology in English;</li> <li>uses basic statistical methods and computer technology to describe enzymatic reactions and analysis of experimental data;</li> <li>uses proper scientific language and terminology in discussions of problem with specialists in enzymology;</li> <li>learns on himself on given subject;</li> <li>understands the need for continuing education throughout the whole life, as well as need for careful planning of tasks and scientific experiments.</li> </ul>	<p>Outcome symbols:</p> <p>K1_W01, K1_W02, K1_W06, K1_W08, K1_W09, K1_U03, K1_U06, K1_U09, K1_U12, K1_K01, K1_K03</p>
16.	<p>Recommended literature:</p> <ul style="list-style-type: none"> <li>„Structure and Mechanism in Protein Science : A Guide to Enzyme Catalysis and Protein Folding", Alan Fersht, W. H. Freeman, 1998;</li> <li>„Enzyme Kinetics : Behavior and Analysis of Rapid Equilibrium and Steady-State Enzyme Systems", Irwin H. Segel, Wiley-Interscience; New Ed edition, 1993.</li> </ul>	
17.	<p>Methods of verification of the assumed learning outcomes:</p> <p><b>written exam</b></p>	

18.	Conditions of earning credits: <b>positive exam result</b>	
19.	Student's workload:	
	Activity	Number of hours for the activity
	Hours of instruction (as stipulated in study programme): • lecture	30 h
	Student's own work: • reading the literature • preparation for the exam	30 h
	Total number of hours:	<b>60 h</b>
	Number of ECTS:	<b>3 ECTS</b>