

## DESCRIPTION OF THE COURSE OF STUDY

Course code	0531-2CHEM-C20-B	
Name of the course in	Polish	<i>Biochemia</i>
	English	<i>Biochemistry</i>

## 1. LOCATION OF THE COURSE OF STUDY WITHIN THE SYSTEM OF STUDIES

1.1. Field of study	Chemistry
1.2. Mode of study	full-time studies
1.3. Level of study	first-cycle bachelor's studies
1.4. Profile of study*	general academic
1.5. Person/s preparing the course description	dr hab. inż. Barbara Gawdzik, prof. UJK
1.6. Contact	b.gawdzik@ujk.edu.pl

## 2. GENERAL CHARACTERISTICS OF THE COURSE OF STUDY

2.1. Language of instruction	English/Polish
2.2. Prerequisites*	organic chemistry, inorganic chemistry, physical chemistry, analytical chemistry

## 3. DETAILED CHARACTERISTICS OF THE COURSE OF STUDY

3.1. Form of classes	Lecture: 15 hours Laboratory: 35 hours	
3.2. Place of classes	Classes in the UJK teaching room	
3.3. Form of assessment	Written exam, pass with grade	
3.4. Teaching methods	1. Verbal (lecture) 2. Practical (independent experiences - in groups of two, tasks to solve)	
3.5. Bibliography	Required reading	1. E.Bańkowski, <i>Biochemia</i> , Edra Urban & Partner, Wrocław 2020, 2. B.D.Hames, N.M.Hooper, <i>Krótkie wykłady biochemia</i> , PWN, Warszawa 2021, 3. L. Klyszejko-Stefanowicz, <i>Ćwiczenia z biochemii</i> . PWN Warszawa 2022
	Further reading	1. R.K.Murray, <i>Biochemia Harpera. Ilustrowana</i> , PZWL, Warszawa 2018, 2. A.Kołodziejczyk, <i>Naturalne związki organiczne</i> , PWN, Warszawa 2022.

## 4. OBJECTIVES, SYLLABUS CONTENT AND INTENDED LEARNING OUTCOMES

<p><b>4.1. Course objectives (including form of classes)</b></p> <p>C1- To familiarize students with the structure and specific properties of biomolecules and their functions in living organisms.</p> <p>C2- Knowledge of the main biochemical mechanisms of the body's functioning.</p> <p>C3 – Broadening and consolidating knowledge about individual bioorganic compounds, as well as manual skills in laboratory work.</p> <p>C4- Reminding and consolidating the rules of safe work in the laboratory</p>
<p><b>4.2. Detailed syllabus (including form of classes)</b></p> <p><b>Lecture</b></p> <p>Selected issues in sugar chemistry, natural oligosaccharides and polysaccharides, High-energy compounds and their role in cell metabolism, Glycolysis and pyruvate oxidation, Citric acid cycle, Lipids: lipid division, fatty acids, aspects of fatty acid biosynthesis, fats (hydrolysis, stereochemistry, physiological role fats), phospholipids, Amino acids: division and nomenclature of protein amino acids, properties of amino acids, Selected biologically active peptides, Proteins: structure and classification of proteins, determining the primary structure of proteins, selected examples of proteins, Enzymes: classification of enzymes, kinetics of enzyme-catalyzed reactions, enzyme inhibition, regulation of enzyme activity, Nucleotides: structure and biosynthesis of nucleotides, purine and pyrimidine bases, nucleosides, structure and role in metabolism, Nucleic acids: structure and functions of nucleic acids DNA, RNA.</p> <p><b>Laboratory</b></p> <p>In the laboratory, students receive training in occupational health and safety regulations and safe work principles, and perform exercises on specific thematic issues.</p>

#### 4.3 Intended learning outcomes

Code	A student, who passed the course	Relation to learning outcomes
within the scope of <b>KNOWLEDGE:</b>		
W01	Knows the structure of bioorganic compounds	CHEM1A_W04
W02	Lists the biological functions of biomolecules	CHEM1A_W04
W03	Knows basic metabolic pathways	CHEM1A_W04
within the scope of <b>ABILITIES:</b>		
U01	Analyzes exercise procedures	CHEM1A_U04
U02	Describes the properties of selected biomolecules	CHEM1A_U04
U03	Recognizes the basic groups of biomolecules	CHEM1A_U04
U04	Acquires teamwork skills	CHEM1A_U14
within the scope of <b>SOCIAL COMPETENCE:</b>		
K01	Is ready to comply with activities for the natural environment	CHEM1A_K02

#### 4.4. Methods of assessment of the intended learning outcomes

Teaching outcomes (code)	Method of assessment (+/-)														
	Exam written			Test*			Project*			Group work*			Others* e.g. standardized test used in e-learning		
	Form of classes			Form of classes			Form of classes			Form of classes			Form of classes		
	L	C	L	L	C	L	L	C	L	L	C	L	L	C	L
W01	+					+									
W02	+					+									
W03	+					+									
U01												+			
U02	+					+									
U03	+					+									
U04												+			
K01												+			

*\*delete as appropriate*

#### 4.5. Criteria of assessment of the intended learning outcomes

Form of classes	Grade	Criterion of assessment
Lecture (L)	3	obtaining 51% - 65% points in the written exam
	3,5	obtaining 66% - 75% points in the written exam
	4	obtaining 76% - 85% points in the written exam
	4,5	obtaining 86% - 95% points in the written exam
	5	obtaining 96% - 100% points in the written exam
Laboratory (L)	3	obtaining 51% - 65% points in the colloquium
	3,5	obtaining 66% - 75% points in the colloquium
	4	obtaining 76% - 85% points in the colloquium
	4,5	obtaining 86% - 95% points in the colloquium
	5	obtaining 96% - 100% points in the colloquium

**5. BALANCE OF ECTS CREDITS – STUDENT’S WORK INPUT**

Category	Student's workload	
	Full-time studies	Extramural studies
<i>NUMBER OF HOURS WITH THE DIRECT PARTICIPATION OF THE TEACHER /CONTACT HOURS/</i>	<b>53</b>	
<i>Participation in lectures*</i>	15	
<i>Participation in classes, seminars, laboratories*</i>	35	
<i>Preparation in the exam/final test*</i>	3	
<i>INDEPENDENT WORK OF THE STUDENT/NON-CONTACT HOURS/</i>	<b>22</b>	
<i>Preparation for the lecture*</i>		
<i>Preparation for the classes, seminars, laboratories*</i>	11	
<i>Preparation for the exam/test*</i>	11	
<i>Gathering materials for the project/Internet query*</i>		
<i>Preparation of multimedia presentation</i>		
<i>Others*</i>		
<i>TOTAL NUMBER OF HOURS</i>	<b>75</b>	
ECTS credits for the course of study	<b>3</b>	

*\*delete as appropriate*

**Accepted for execution** (date and legible signatures of the teachers running the course in the given academic year)

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