
		UNIVERSITY OF EAST SARAJEVO Faculty of Technology Zvornik					
		Study programme: Chemical Engineering and Technology					
		Cycle I		Year IV			
Course title		Biochemistry in Food Technology					
Department		Department for Food technology – Faculty of Technology Zvornik					
Course code		Course status		Semester		ECTS	
04-1-100-5		Compulsory		V		7	
Teacher		Milenko Smiljanić, PhD, associate professor					
Teaching assistant		Milenko Smiljanić, PhD, associate professor					
Number of hours/ teaching workload (per week)			Individual student workload (in hours per semester)			Student workload coefficient S₀	
Lectures	Auditory exercises	Laboratory exercises	Lectures	Auditory exercises	Laboratory exercises	S₀	
3	1	2	60	20	40	1.33	
3*15+1*15+2*15=90 hours			(3*15*1.33+1*15*1.33+2*15*1.33)=120 hours				
Total course workload 90 + 120 =210 hours per semester							
Learning outcomes		After finishing the course, students will be able to: <ol style="list-style-type: none"> demonstrate and utilize the necessary level of knowledge in biochemistry required for the study of food science and food technologies demonstrate and utilize basic knowledge about biochemical compounds (ability to understand the structure and biological function of proteins, enzymes and coenzymes, nucleic acids, carbohydrates and lipids) and reactions (biosynthesis and breakdown of biomolecules) that form the basis of the main life processes. demonstrate and utilize the knowledge of the main pathways and energy balances of metabolic transformations in biomolecules master the basics of the regulation of the appropriate metabolic pathways understand the integration of biochemical transformations of natural compounds with energy transformations in living organisms demonstrate and utilize the basic knowledge needed to understand experimental methods based on the biological activity of molecules demonstrate and utilize the skills of performing simple biochemical experiments, presenting literature data and experimental results, effective learning, critical thinking and evaluation of teaching and learning outcomes. 					
Prerequisites							
Teaching methods		Lectures, auditory and laboratory exercises, mid-term tests (colloquia).					
Syllabus outline per week		<ol style="list-style-type: none"> Subject and importance of biochemistry. Basics of bioenergetics. Basics of biocatalysis and biochemistry of functional compounds (catalysis in biological systems, structure, classification, mechanism and specificity of enzyme action, enzyme inhibition, cofactors). Influence of individual factors on enzyme activity (environmental reaction, temperature, enzyme concentration, substrate concentration), regulation of enzymatic reactions. Biochemical properties of carbohydrates and important ways of breaking down carbohydrates (anaerobic and aerobic decomposition). Oxidative decarboxylation of pyruvic acids, Krebs cycle. Carbon dioxide assimilation (photosynthesis, heterosynthesis, chemosynthesis). Biochemical properties of lipids and their catabolism. Knowledge test. Biosynthesis of fatty acids, triglycerides and phospholipids. Amino acids, properties, general reactions of amino acid metabolism. Structure, properties and functions of nucleic acids. Protein biosynthesis. Vitamins and minerals. Metabolism as a unique system. Connection, control and regulation of the metabolism of the main groups of natural compounds. Topochemistry of the cell, localization of biochemical processes in the cell, biological 					

	membranes, transport of ions in the cell. 15. Methods of analytical biochemistry. Knowledge test. Final test. Mid-term tests are taken after the 7th week and the 15th week. Semester verification is required after the 15th week.			
Obligatory reading				
Author	Title, publisher	Year	Pages	
Величковић Д.	Основи биохемије за студенте биотехничких наука, Универзитет у Београду, Београд.	2000		
Karlson P.	Биохемија. Школска књига, Загреб.	1993		
Бараћ М., С. Станојевић, М. Пешић, Д. Зорић	Практикум из биохемије, Универзитет у Београду, Београд.	2010		
Џамић М.	Практикум из биохемије, Грађевинска књига, Београд.	1986		
Additional reading				
Author	Title, publisher	Year	Pages	
Jeremy M. Berg, John L. Tymoczko, Lubert Stryer.	Biochemistry, 5th edition, W. H. Freeman and Company, New York.	2002		
Nelson, D., Cox, M.	Lehninger Principles of Biochemistry, fourth edition, Freeman, W. H. & Company, New York.	2004		
Obligations, assessment methods and grading system	Type of student evaluation		Grade points	Percentage
	Pre-exam obligations			
		Attendance	6	6 %
		Mid-term test I	22	22 %
		Mid-term test II	22	22 %
		Laboratory exercises	20	20 %
	Final examination			
		Final examination (oral)	30	30 %
Total			100	100 %
Web page	www.tfzv.ues.rs.ba			
Date	2023			