

BACHELOR 'S PROGRAMME
BIOCHEMISTRY
 2ND YEAR OF STUDY, 4TH SEMESTER

COURSE TITLE		BIOCHEMISTRY
COURSE CODE	31010030050SL1112203	
COURSE TYPE	full attendance	
COURSE LEVEL	1 st cycle (bachelor's degree)	
YEAR OF STUDY, SEMESTER	2 nd year of study, 1 st semester	
NUMBER OF ECTS CREDITS	5	
NUMBER OF HOURS PER WEEK	4 (2 lecture hours + 2 seminar/laboratory hours)	
NAME OF LECTURE HOLDER	Assoc. Prof. PhD Vasile Robert GRADINARU	
NAME OF SEMINAR HOLDER	Assoc. Prof. PhD Vasile Robert GRADINARU	
PREREQUISITES	English (B level)	
A	GENERAL AND COURSE-SPECIFIC COMPETENCES	
	<p>General competences:</p> <ul style="list-style-type: none"> → Have capacity for analytical and critical thinking. → Have capacity for planning, time management and self-motivation. → Act with orientation to quality → Act with honesty, truthfulness, rigor, justice, efficiency and respect. <p>Course-specific competences:</p> <ul style="list-style-type: none"> → Know and understand the composition and characteristics of the molecules that make up living things and the fundamentals of the physicochemical processes occurring therein → Understand the biochemical mechanisms of small and large molecules that support the organism's physiological functioning. 	
B	LEARNING OUTCOMES	
	<ul style="list-style-type: none"> → Explain the principles and application of biochemistry as a multidisciplinary approach between chemistry and biology. → Analyze and interpret research data and scientific literature in pursuit of independent lines of inquiry in biochemistry. → Design their own experiments to solve scientific questions using applicable course content and laboratory skills. → Use biochemical concepts to explain the functional role of biological molecules and complex processes such as metabolic pathways or diseases. → Use effective communication skills to transfer their scientific knowledge to peers and to the larger community to successfully compete in industry or succeed in medical/graduate school. 	
C	LECTURE CONTENT	
	Introduction. Amino acids. Monosaccharides. Oligo and polysaccharides. Lipids. Insoluble vitamins. Soluble vitamins. Nucleic acids structure. Proteins. Enzymes. Enzymes properties. Immunity and antibodies. DNA structure and amplification techniques.	
D	RECOMMENDED READING FOR LECTURES	
	<ol style="list-style-type: none"> 1. Fundamental of Biochemistry (3th Edition)– Voet, D., Voet, J., Pratt, C. W. (2013). 2. Lehninger Principles of Biochemistry (6th Edition)– Nelson, D. L., Cox, M. M. (2012). 3. Biochemistry (7th Edition)– Berg, J.M., Tymoczko, J.L., Stryer, L. (2012). 	

E	SEMINAR/LABORATORY CONTENT	
	Aminoacids structure and ionization. Equipments and materials used in Biochemistry laboratory. Biochemical buffers. Protein quantification in solution: direct or colorimetric methods. Levels of protein organization. Enzyme extraction from a animal or vegetal source and activity measurements as function of variours parameters. Characterization of nucleic acids by electrophoresis.	
F	RECOMMENDED READING FOR SEMINARS	
	<ol style="list-style-type: none"> 1. Boyer, R., Biochemistry laboratory: modern theory and techniques, Pearson Education Inc., San Francisco, CA, 2006. 2. Katoh, R., Analytical Techniques in Biochemistry and Molecular Biology, Springer, NY, 2011. 3. Rehm, H., Protein Biochemistry and Proteomics (Der Experimentier Series), 1st edition, Elsevier, Burlington, USA, 2006. 4. Bollag, D.M., Rozycki, M.D., Edelstein, S.J., Protein methods (2nd Ed.), Wiley-Liss, NY, 1997. 	
G	EDUCATION STYLE	
	LEARNING AND TEACHING METHODS	Narration, demonstrated examples, knowledges synthesis, exposure, guided discovery, lab practicals, workshops, computer-based learning
	ASSESSMENT METHODS	Practical reports (based on lab results), Computer-based and data processing exercises, Essays, Traditional testing
	LANGUAGE OF INSTRUCTION	English