



<b>Course ID:</b> HDOB22	<b>Course name: COMMUNICATIONS IN LIVING ORGANISMS</b>		
<b>Cycle: THIRD</b>	<b>Year: FIRST</b>	<b>Semester: I</b>	<b>ECTS credits: 15</b>
<b>Course status: ELECTIVE</b>		<b>Total course hours: 90</b> Lectures: 45 Laboratory: 45	
<b>Teaching participants:</b>	<b>Teachers and associates with expertise in the field to which the subject belongs</b>		
<b>Prerequisite for enrollment:</b>	-		
<b>Course aims:</b>	Students are provided with a biochemical understanding of the principles of communication between living things cells and tissues at the molecular level		
<b>Thematic course units:</b>	<p>Communications in living organisms. Biological membranes. Structural protein. Molecules of intercellular communication. Primary message carriers. Specific effects of neurotransmitters and hormones. Secondary message carriers. Cyclic adenosine monophosphate. Inositol and diacylglycerols. Ca<sup>2+</sup> ions. Acceptors of primary and secondary message carriers. Proteins that react with Ca<sup>2+</sup> ions. Membrane proteins that transport Ca<sup>2+</sup> ions. Cytoplasmic proteins, troponin C, parvalbumin, calmodulin, calcikestrin. Mechanism of transport of protons and Ca<sup>2+</sup> ions through the biological membrane.</p> <p>Protein-metal ion interaction. Research methods of protein-metal ion interaction. Ion competitiveness for one protein.</p>		
<b>Learning outcomes:</b>			
<b>Teaching methodology:</b>			
<b>Assessment methods and grading system<sup>1</sup>:</b>	<b>Grading criteria</b>		
	Criteria	Maximal score	Required score
	1. Midterms	30	16,5
	2. Seminar paper	30	16,5
	3. Final exam	40	22
	Total	100	55
Note: Class activity is scored through student work on exercises.			
<b>Scores and grading</b>			
Score	Grade	Grade	

<sup>1</sup>The grading structure for each subject is determined by the Council of the organizational unit before the beginning of the academic year in which the subject is taught as per Article 64, paragraph 6 of the Law on Higher Education of Sarajevo Canton

	(BiH)	(ECTS)
< 55	5	F, FX
55-64	6	E
65-74	7	D
75-84	8	C
85-94	9	B
95-100	10	A

  

<b>Literature<sup>2</sup>:</b>	<p>Supplementary literature:</p> <ol style="list-style-type: none"> <li>1. M. J. Welch, C. S. Redvanly, Handbook of Radiopharmaceuticals, Radiochemistry and Applications, Wiley Inc. USA, 2003</li> <li>2. S. Vallabhajosula, Molecular Imaging, Radiopharmaceuticals for PET and SPECT, Springer, 2009</li> <li>3. T. Stigbrand, J. Carlsson, G. P. Adams, Targeted Radionuclide Tumor Therapy, Springer, 2008</li> </ol>
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<sup>2</sup>The Senate of the higher education institution, as an institution, or the Council of the organizational unit of the higher education institution, as a public institution, determines by a special decision, which is published on its website before the beginning of the academic year obligatory, mandatory and recommended textbooks and manuals, as well as other recommended literature based on which exams are prepared and taken as per Article 56, paragraph 3 of the Law on Higher Education of the Sarajevo Canton