Course ID: HOB473	**Course name: BIOANALYTICAL CHEMISTRY**		
Cycle: FIRST	**Year: FOURTH**	**Semester: VIII**	**ECTS credits: 4**
Course status: MANDATORY		**Total course hours: 60** Lectures: 30 Laboratory: 30	
Teaching participants:	**Teachers and associates with expertise in the field of bioanalytical chemistry**		
Prerequisite for enrollment:	-		
Course aims:	Introducing students to the problems of chemical and instrumental analysis of complex biological substrates such as samples of herbal, animal and human tissue, and body fluids. Furthermore, students are introduced to specific chemical analyses of foodstuffs.		
Thematic course units:	1. Introduction in qualitative and quantitative bioanalytical chemistry. 2. Samples of human biological material, samples of plant origin and animal samples. 3. Samples of foodstuffs. 4. Preparation of samples for analysis in bioanalytical laboratory; centrifugation. 5. Blood, sampling, transport and storage, sample processing, urine collection and preservation. 6. Other materials: cerebrospinal fluid, saliva, milk, amniotic fluid, gastric content and washes, stool, tissues. 7. Selection of bioanalytical methods, dependence of the bioanalytical procedure on the nature of biological sample and the amount of analyzed chemical parameter in it. 8. Spectroscopic and electrochemical methods; osmometry. 9. Enzyme analysis and immunochemical methods. 10. Electrophoresis, isoelectric focusing. 11. Chromatography 12. DNA and RNA structure analysis and application in medical genetics and forensic medicine. 13. Automatization. 14. Dry chemistry. 15. Application of information technologies in bioanalytical laboratory and statistical methods.		

<table>
<tr><td>Learning outcomes:</td><td>Knowledge: The student will be introduced to the types of the biological samples and sampling methods, with the importance of applying pre-analytical, analytical and post-analytical procedures in bioanalysis. The student will be able to choose the appropriate method of analysis depending on the nature of the biological sample and the expected amount of the analyzed chemical parameter. In this context, the student will be introduced to the application various chemical, instrumental, immunochemical and enzymatic methods in bioanalysis.
Skills: The student will be able to apply pre-analytical, analytical and post-analytical procedures in bioanalysis, as well as to make correct choice of method for the analysis of a given biological sample. Furthermore, the student will know about the importance of applying information technologies in bioanalytical laboratory.
Competencies: The student will acquire competencies on the adequate application of chemical, instrumental, immunochemical and enzymatic methods in the analysis of biological samples. Also, they will acquire competencies for the application of appropriate information technologies in bioanalytical laboratory in analytical and post-analytical procedures.</td></tr>
<tr><td>Teaching methodology:</td><td>Classroom lectures and laboratory exercises.</td></tr>
<tr><td>Assessment methods and grading system[1]:</td><td>
<table>
<tr><td colspan="3">Grading criteria</td></tr>
<tr><td>Criteria</td><td>Maximal score</td><td>Required score</td></tr>
<tr><td>1. Class attendance</td><td>5</td><td>3</td></tr>
<tr><td>2. Class activities</td><td>10</td><td>5</td></tr>
<tr><td>3. Midterms</td><td>45</td><td>25</td></tr>
<tr><td>4. Final exam</td><td>40</td><td>22</td></tr>
<tr><td>Total</td><td>100</td><td>55</td></tr>
<tr><td colspan="3">Scores and grading</td></tr>
<tr><td>Score</td><td>Grade (B&H)</td><td>Grade (ECTS)</td></tr>
<tr><td>< 55</td><td>5</td><td>F, FX</td></tr>
<tr><td>55–64</td><td>6</td><td>E</td></tr>
<tr><td>65–74</td><td>7</td><td>D</td></tr>
<tr><td>75–84</td><td>8</td><td>C</td></tr>
<tr><td>85–94</td><td>9</td><td>B</td></tr>
<tr><td>95–100</td><td>10</td><td>A</td></tr>
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[1] 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

Literature[2]:	Mandatory literature: 1. Štraus, B., (1997) ANALITIČKE TEHNIKE U KLINIČKOM LABORATORIJU, Medicinska knjiga, Zagreb. 2. Baynes, J. W., Dominiczak. M. H., (2005) MEDICAL BIOCHEMISTRY, Elsevier Mosby. 3. Manz, A., Pamme, N., Lossifidis, D., (2004) BIOANALYTICAL CHEMISTRY, Imperial College Press. Supplementary literature: 1. Tahirović I., Topčagić A., (2012) PRAKTIKUM IZ BIOHEMIJE I, PMF, Sarajevo. 2. Mikkelsen, S.R., Corto´n, E., (2004) BIOANALYTICAL CHEMISTRY, John Wiley & Sons, Inc., Hoboken, New Jersey. 3. Holme, D.J., Peck, H. (1998) ANALYTICAL BIOCHEMISTRY, 3rd ed, Prentice hole, Singapore. 4. Authorized lectures.

[2] 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