Course ID: HOBIO5	**Course name: BIOINFORMATICS**		
Cycle: SECOND	**Year:** FIRST	**Semester:** I	**ECTS credits:** 4
Course status: ELECTIVE		**Total course hours: 60** Lectures: 30 Laboratory: 30	

Teaching participants:	Teachers and associates with expertise in the field to which the subject belongs
Prerequisite for enrollment:	-
Course aims:	The aim of the course is to introduce students to the basic principles of bioinformatics, its most important areas of study, as well as techniques and applications in biochemistry.
Thematic course units:	1. Basic areas of chemical bioinformatics 2. Applications of bioinformatics (glycomix, lipidomix, proteomix and genomics) 3. Basis, definition and significance of metabolomix 4. Review of techniques in the study of metabolomix (methods of isolation and analysis of metabolites) 5. Basic principles of metabolic engineering
Learning outcomes:	*Knowledge:* Acquisition of advanced knowledge of computer tools used to monitor biochemical reactions (glycomix, lipomix, proteomyx and genomics). *Skills:* Use computer tools for the stated purposes by using programs and available online platforms. *Competences:* The student will be able to independently use various computer tools for the purpose of studying biochemical reactions and interactions of molecules (glycomix, lipomix, proteomix and genomics)
Teaching methodology:	Auditory lectures; Laboratory exercises
Assessment methods and grading system[1]:	Grading criteria

	Criteria	Maximal score	Required score
1.	Class attendance	5	3
2.	Class activities	15	8
3.	Midterms	40	22
4.	Final exam	40	22
	Total	100	55

Scores and grading

[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

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<tr><th>Score</th><th>Grade (BiH)</th><th>Grade (ECTS)</th></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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<td>Literature[2]:</td>
<td>Mandatory literature:
1. Tsai, C.S. (2007) Biomacromolecules: Introduction to structure, function and informatics, John Wiley & Sons.
2. Edwards, D., Stajich, J.E., Hansen, D. (2009) Bioinformatics: tools and applications, Springer
3. Hoppensteadt, F.C., Peskin, C.S. (2010) Modeling and simulation in medicine and life sciences, Springer
4. Zlatović, M., Petrović, M. (2016) Osnovi molekulskog modeliranja, Planeta Print
Supplementary literature:
5. Weckwerth, W. (2007) Metabolomics: methods and protocols, Humana Press
6. Griffiths, W.J. (2008) Metabolomics, metabonomics and metabolite profiling, Royal Society of Chemistry
7. Lee, S.Y., Papoutsakis, E.T. (1999) Metabolic engineering” CRC Press</td>
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[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