



Course ID: HOA115	Course name: STOICHIOMETRY		
Cycle: FIRST	Year: FIRST	Semester: I	ECTS credits: 5
Course status: MANDATORY		Total course hours: 60 Lectures: 15 Calculation exercises: 45	
Teaching participants:	Teachers and associates with expertise in the field to which the subject belongs		
Prerequisite for enrollment:	-		
Course aims:	<ol style="list-style-type: none">1. Enabling students to present chemical laws, chemical reactions and processes through chemical calculations2. Enabling students to master the basic chemical calculation in the field of molar quantities, chemical formulas, equations of chemical reactions, solutions and gases, and solving of quantitative chemical problems with the application of basic starting points of stoichiometry.		
Thematic course units:	<ol style="list-style-type: none">1. Introduction to chemical calculation. Units and dimensions.2. Dimensional analysis and conversion factor. Two or more conversion factors.3. Relative atomic and molecular mass. Avogadro's number and mol. Chemical formula.4. Calculations from chemical equations. Chemical equivalents.5. Neutralization of acids and bases. Salt equivalence.6. Limiting reactant. Theoretical and actual yield.7. Oxidation and reduction. Oxidation number. Oxidation and reduction equations.8. Quantitative expression of solution composition.9. Mass and molar concentration. Mass and molar fraction.10. Physico-chemical properties of solutions.11. Gas laws. Avogadro's law.12. Balance of chemical reactions. Equilibrium constant.13. Equilibrium in electrolyte solutions. Dissociation constant.14. Ionic product of water. pH value.15. Buffers. Salt hydrolysis. Solubility product.		
Learning outcomes:	<i>Knowledge:</i> <ol style="list-style-type: none">1. To compare basic concepts in the field of molar quantities (relative atomic and molecular mass, amount of substance, molar mass, molar volume, number of units, Avogadro's number), equations of chemical reactions, solutions and gases.2. Calculate the defined concepts of molar quantities, argue their		

	<p>mutual connection as well as the connection with other quantities in the field of chemistry and calculate them in differently asked questions and tasks.</p> <p><i>Skills:</i> Analyze the problems and find the simplest way to solve them by applying stoichiometric rules and knowledge.</p> <p><i>Competencies:</i> Based on acquired theoretical knowledge, calculation skills and basic principles of stoichiometry, gain the ability to systematically analyze and independently solve tasks and quantitative issues in chemical processes and reactions in all fields of chemistry.</p>																																													
Teaching methodology:	Method of oral presentation, method of conversation, method of working on the text																																													
Assessment methods and grading system¹:	<table border="1"> <thead> <tr> <th colspan="3">Grading criteria</th> </tr> <tr> <th>Criteria</th> <th>Maximal score</th> <th>Required score</th> </tr> </thead> <tbody> <tr> <td>1. Class attendance</td> <td>5</td> <td>3</td> </tr> <tr> <td>2. Class activities</td> <td>15</td> <td>8</td> </tr> <tr> <td>3. Test</td> <td>2 × 20</td> <td>2 × 11</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> <th colspan="3">Scores and grading</th> </tr> <tr> <th>Score</th> <th>Grade (B&H)</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> </tbody> </table>	Grading criteria			Criteria	Maximal score	Required score	1. Class attendance	5	3	2. Class activities	15	8	3. Test	2 × 20	2 × 11	4. Final exam	40	22	Total	100	55	Scores and grading			Score	Grade (B&H)	Grade (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
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Literature²:	<p>Mandatory literature:</p> <ol style="list-style-type: none"> Sikirica M. Stehiometrija. Zagreb: Školska knjiga; 2001. Filipović I, Lipanović S. Opća i anorganska kemija I dio. Zagreb: Školska knjiga; 1995. <p>Supplementary literature:</p> <ol style="list-style-type: none"> Tomljanović M. Opća kemija. Zenica: Hijatus; 2004 																																													

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

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