



<b>Course ID:</b> HOA116	<b>Course name: GENERAL CHEMISTRY I</b>		
<b>Cycle: FIRST</b>	<b>Year: FIRST</b>	<b>Semester: I</b>	<b>ECTS credits: 5</b>
<b>Course status: MANDATORY</b>		<b>Total course hours: 45</b> Lectures: 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>	Acquiring the necessary knowledge to understand the facts about substances, their structure, subatomic particles and understanding the basic chemical principles, theories and laws for a more detailed study of certain disciplines in all fields of chemistry.		
<b>Thematic course units:</b>	<ol style="list-style-type: none"><li>1. Natural sciences and chemistry. International System of Units.</li><li>2. Types and properties of substances.</li><li>3. Relative atomic mass. Relative molecular mass. Molar quantity. The number of constituent particles. Amount of substance and mol.</li><li>4. Chemical formulas and equations of chemical reactions.</li><li>5. Atomic structure, subatomic particles.</li><li>6. Electronic structure of atoms. Photoelectric effect. Photons</li><li>7. Quantum mechanics and atomic structure. Quantum levels and the Pauli principle.</li><li>8. Atomic orbitals and electronic configuration.</li><li>9. Atom Structure and the Periodic Table of the Elements.</li><li>10. Gases and gas laws. Kinetic theory of gases.</li><li>11. Phase transformations. Liquids: viscosity, capillarity, surface tension, vapor pressure, boiling point, evaporation.</li><li>12. Solid state: melting point, phase diagrams, structure of crystal, bonding.</li><li>13. Disperse systems. Solutions and solubility. Raoul's law.</li><li>14. Colligative properties of solutions. Diffusion and osmosis.</li><li>15. Fundamentals of thermodynamics.</li></ol>		
<b>Learning outcomes:</b>	<i>Knowledge:</i> <ol style="list-style-type: none"><li>1. Explain the main characteristics of subatomic particles, isotopes, ions and their relationship with atomic and mass number, average atomic mass and charge.</li><li>2. Explain the periodicity of atomic sizes, ionization energy and electronic affinity.</li><li>3. Explain the structural characteristics of elements and their compounds, gases, liquids and solids.</li><li>4. Define solutions and solubility and analyze the quantitative composition of solutions.</li><li>5. Explain the basic characteristics of electrolytes.</li><li>6. Describe the characteristics of chemical equilibrium in homogeneous</li></ol>		

	<p>and heterogeneous systems.</p> <p><i>Skills:</i></p> <ol style="list-style-type: none"> <li>1. Explain the connection between the structure of atoms and molecules, the periodic table of elements and physico-chemical laws.</li> <li>2. Critically consider the physico-chemical differences between gases, solutions and solids.</li> <li>3. Define the basic concepts of chemical equilibrium in different systems.</li> </ol> <p><i>Competencies:</i></p> <ol style="list-style-type: none"> <li>1. Based on the acquired knowledge, predict the properties and applications of different substances.</li> <li>2. Independently apply knowledge in all other fields of chemistry in the continuation of Study.</li> </ol>																																													
<b>Teaching methodology:</b>	Method of oral presentation, method of conversation																																													
<b>Assessment methods and grading system<sup>1</sup>:</b>	<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>40</td> <td>22</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&amp;H)</th> <th>Grade (ECTS)</th> </tr> <tr> <td>&lt; 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	40	22	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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<b>Literature<sup>2</sup>:</b>	<p><b>Mandatory literature:</b></p> <ol style="list-style-type: none"> <li>1. Filipović I, Lipanović S. Opća i anorganska kemija I dio. Zagreb: Školska knjiga; 1995.</li> </ol> <p><b>Supplementary literature:</b></p> <ol style="list-style-type: none"> <li>1. Chang R. Chemistry. 6th ed. Boston: WCB/McGraw-Hill; 1998.</li> <li>2. Tomljanović M. Opća kemija. Zenica: Hijatus; 2004.</li> <li>3. Kahrović E. Anorganska hemija. Sarajevo: Bemust, Univerzitetska knjiga; 2005.</li> <li>4. Sikirica M. Stehiometrija. Zagreb: Školska knjiga; 2001.</li> </ol>																																													

<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

<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