Course ID: HFH239	**Course name: SELECTED TOPICS OF PHYSICAL CHEMISTRY I**		
Cycle: FIRST	**Year: SECOND**	**Semester: III**	**ECTS credits: 9**
Course status: MANDATORY		**Total course hours: 120** Lectures: 45 Auditory: 45 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 acquire knowledge about gases, liquids and solutions. Explain thermodynamic properties from a chemical point of view, as well as the balance and kinetics of chemical reactions.
Thematic course units:	1. Ideal and realistic gas. Kinetic theory of gases. 2. Laws of thermodynamics, basic thermodynamic concepts. 3. Status functions. Zero law of thermodynamics, temperature. 4. The first law of thermodynamics, heat, work, internal energy, enthalpy. 5. Thermochemistry, Hess's law. II law of thermodynamics. 6. Reversible and irreversible processes, Carnot cycle. 7. Entropy, Helmoltz and Gibbs energy, III law of thermodynamics. 8. Physical transformations of pure substances, phase transitions, phase equilibria. 9. Simple mixtures - thermodynamic description of mixtures. 10. Chemical potential, properties of the solution - colligative properties. 11. Chemical equilibria. 12. Transport properties, molecular movements in gases and liquids. 13. Speed, order and molecularity of the reaction. Zero, first, second and nth order reactions. 14. Determining the order of the reaction. Influence of temperature on reaction rate. 15. Collision theory. Transition state theory. Principles homogeneous and heterogeneous.
Learning outcomes:	Knowledge: Acquired knowledge of gases, liquids and solutions. Skills: Students will be able to use exact thermodynamic methods as a basis for understanding the essence of chemical processes. Competences: Application of thermodynamic and kinetic methods in other branches of chemistry.
Teaching methodology:	Lectures (oral presentation and interactive classes)

<table>
<tr><td></td><td>Auditory exercises
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>0</td><td>0</td></tr>
<tr><td>2. Class activities</td><td>15</td><td>8</td></tr>
<tr><td>3. Midterms</td><td>2 × 20</td><td>2× 11</td></tr>
<tr><td>4. Final exam</td><td>45</td><td>25</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 (BiH)</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>
</table>
</td></tr>
<tr><td>Literature[2]:</td><td>Mandatory literature:
1. S. Đorđević, V. Dražić, Fizička hemija, Tehnološko-metalurški fakultet, Beograd

Supplementary literature:
1. P. W. Atkins, Physical Chemistry, Oxford University Press
2. M. Cacan, F. Korać: Zbirka zadataka iz fizikalne hemije (odabrana poglavlja) 2005.
3. F. Korać, S. Gutić, S. Gojak, S. Islamović, J. Ostojić: Praktikum iz fizikalne hemije I i II, (2013)</td></tr>
</table>

[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