



Course ID: HFH234	Course name: PHYSICAL CHEMISTRY I		
Cycle: FIRST	Year: SECOND	Semester: III	ECTS credits: 7
Course status: MANDATORY		Total course hours: 105 Lectures: 45 Auditory: 30 Laboratory: 30	
Teaching participants:	Teachers and associates with expertise in the field to which the subject belongs		
Prerequisite for enrollment:	-		
Course aims:	The objectives of the course are contained in the fact that Physical Chemistry deals with the physical principles on which chemistry is based. The aim of the course is to acquire knowledge about chemical thermodynamics, kinetic theory of gases, etc.		
Thematic course units:	<ol style="list-style-type: none">1. Real thermodynamic systems, real gas, van der Waals equation2. Virial equations of state and other equations of state of real gases.3. Kinetic theory of gases.4. Laws of thermodynamics, introduction, basic thermodynamic concepts.5. State functions, Zero law of thermodynamics, temperature.6. The first law of thermodynamics, heat, work, internal energy, enthalpy7. Application of thermodynamics, isothermal, isochoric, isobaric and adiabatic processes8. Thermochemistry, Hess's law.9. Reversible and irreversible processes, Carnot cycle.10. The second law of thermodynamics.11. Entropy, production and transport of entropy, entropy and probability.12. Entropy changes in isolated systems and phase transitions.13. Helmholtz and Gibbs energy, criteria of spontaneity and equilibrium.14. Characteristic functions, Maxwell's relations.15. Chemical equilibrium constant in statistical thermodynamics.		
Learning outcomes:	Knowledge: Acquired knowledge of thermodynamics, kinetic theory of gases, chemical equilibrium. Skills: Students will be able to use exact thermodynamic methods as a basis for understanding the essence of chemical processes. Competences: Application of thermodynamic methods in other branches of chemistry.		
Teaching methodology:	Lectures (oral presentation and interactive classes) Auditory exercises Laboratory exercises		

Assessment methods and grading system¹:	Grading criteria		
	Criteria	Maximal score	Required score
	1. Class attendance	5	3
	2. Class activities	15	8
	3. Midterms	2 × 20	2 × 11
	4. Final exam	40	22
	Total	100	55
	Scores and grading		
	Score	Grade (BiH)	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	
Literature²:	<p>Mandatory literature:</p> <ol style="list-style-type: none"> Đorđević S., Dražić V., Fizička hemija, Tehnološko-metalurški fakultet, Beograd Cacan M., Korać F: Zbirka zadataka iz fizikalne hemije (odabrana poglavlja) 2005. Korać F., Gutić S., Gojak S., Islamović S., Ostojić J.: Praktikum iz fizikalne hemije I i II, (2013) <p>Supplementary literature:</p> <ol style="list-style-type: none"> P. W. Atkins, Physical Chemistry, Oxford University Press D. Minić, A. Antić-Jovanović, Fizička hemija, Beograd, 2005. 		

¹The 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

²The 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