



Course ID: HDFH15	Course name: KINETICS OF ELECTRODE REACTIONS		
Cycle: THIRD	Year: FIRST	Semester: I	ECTS credits: 15
Course status: ELECTIVE	Total course hours: 90 Lectures: 45 Laboratory: 45		
Teaching participants:	Teachers and associates with expertise in the field to which the subject belongs		
Prerequisite for enrollment:	-		
Course aims:	Through this course, students acquire new knowledge and are trained for scientific research work in the field of testing the rates of electrochemical reactions and their application to solving various physicochemical problems and for analytical purposes.		
Thematic course units:	Mass transfer in an electrochemical cell, diffusion and migration. Butler-Folmer equation. I-E curve of reversible electrochemical reaction preceded by fast and slow chemical reaction in solution. Methods of determining the order of an electrochemical reaction. Examples of complex electrode reactions. Electrocatalysis - the role of the nature and crystallographic orientation of the electrode material. Electrochemical aspect of corrosion. Kinetics of new phase formation. Adsorption isotherms of intermediate species of electrochemical reactions. Kinetics of photoelectrochemical energy conversion. Electric double layer models, specific adsorption. Measurement of capacity and charge density of the electric double layer. The influence of the potential distribution through the electric double layer on the kinetics of the electrochemical reaction. Modern methods of electrode kinetics.		
Learning outcomes:			
Teaching methodology:			

Assessment methods and grading system¹:	Grading criteria		
	Criteria	Maximal score	Required score
	1. Midterms	30	16,5
	2. Seminar paper	30	16,5
	3. Final exam	40	22
	Total	100	55
	Note: Class activity is scored through student work on exercises.		
	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>Supplementary literature:</p> <ol style="list-style-type: none"> 1. S. Mentus, Elektrohemija, 3. izdanje, Univerzitet u Beogradu, 2008. 2. C. H. Hamman, A. Hamnett, W. Vielstich, Electrochemistry, 2nd edition, Wiley, 2007. 3. R. Holze, Electrochemical Thermodynamics and Kinetics, Springer, 2007. 4. A. J. Bard, L. R. Faulkner, Electrochemical Methods - Fundamentals and Applications, John Wiley and Sons, 1980. 5. A. J. Bard et al. (eds.), Encyclopedia of Electrochemistry: Volume 2 - Interfacial Kinetics and Mass Transport, Volume 4 - Corrosion and Oxide Films, Wiley, 2007. 6. M. E. Orazem, B. Tribollet, Electrochemical Impedance Spectroscopy, John Wiley and Sons, 2008. 		

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