
		<b>UNIVERSITY OF EAST SARAJEVO</b> Faculty of Technology					
		<b>Study programme: Chemical Engineering and Technology</b>					
		Undergraduate		Academic year III			
<b>Course title</b>		<b>Corrosion and Protection</b>					
<b>Department</b>		Department for Physical Chemistry, Electrochemical Engineering and Materials– Faculty of Technology					
<b>Course code</b>		<b>Course status</b>		<b>Semester</b>		<b>ECTS</b>	
04-1-027-5		obligatory		V		6	
<b>Teacher</b>		Dr. Milorad Tomić, full profesor					
<b>Teaching assistant</b>		Dr. Marija Mitrović, assistant professor					
<b>Number of classes/ teaching workload (per week)</b>			<b>Individual student workload (in hours per semester)</b>			<b>Student workload coefficient S<sub>0</sub></b>	
<b>Lectures</b>	<b>Auditory exercises</b>	<b>Laboratory exercises</b>	<b>Lectures</b>	<b>Auditory exercises</b>	<b>Laboratory exercises</b>	<b>S<sub>0</sub></b>	
3	0	2	63	0	42	1,40	
3*15+0*15+2*15=75 hours			(3*15*1.4+0*15*1.4+2*15*1.4)=105 hours				
Total course workload 75 + 135 = 180 hours per semester							
<b>Learning outcomes</b>		After finishing the course, students will be able to: <ol style="list-style-type: none"> <li>Understand the laws of corrosion on metals and their alloys.</li> <li>Know and comprehend the mechanisms of various corrosion agents on metals and metal alloys.</li> <li>Understand the mechanism of depolarization.</li> <li>Theoretically and practically apply protection to metals and metal alloys using protectors.</li> <li>Differentiate between types of metal and metal alloy corrosion.</li> <li>Select and propose an appropriate method for protecting metals and metal alloys from corrosion.</li> </ol>					
<b>Prerequisites</b>		No prerequisites					
<b>Teaching methods</b>		Lectures, auditory and laboratory classes, practic work on corrosion protection.					
<b>Syllabus outline per week</b>		<i>List of teaching units per weeks</i> <ol style="list-style-type: none"> <li>Introduction. Classification of corrosion. Dry (gas) and chemical (wet) corrosion of metals and alloys.</li> <li>Thermodynamics of chemical corrosion of metals. Laws of oxide formation on metals. Forms of chemical corrosion of metals. Growth of cast iron.</li> <li>Hydrogen corrosion. Carbonyl corrosion. Gas corrosion of metals due to sulfur compounds. Corrosion in the presence of chlorine and hydrogen chloride.</li> <li>Electrochemical corrosion of metals and alloys. Thermodynamics of electrochemical corrosion of metals. Heterogeneous and homogeneous dissolution of metals in electrolyte solutions.</li> <li>Conditions and causes of electrochemical corrosion. Kinetics of electrochemical corrosion of metals.</li> <li>Corrosion factors. Electrode polarization and corrosion process control.</li> <li>Passivation of metals in the presence of oxidizing agents. Corrosion inhibitors and activators.</li> <li>Knowledge assessment. (Colloquium I)</li> <li>Types of electrochemical corrosion. Uniform electrochemical corrosion. Hydrogen embrittlement corrosion. Oxygen consumption corrosion of metals.</li> <li>Corrosion of metals in gaps. Intergranular corrosion of metals. Galvanic electrochemical corrosion of metals.</li> <li>Selective corrosion of metals and alloys. Stress corrosion of metals with cracks and corrosion fatigue. Impact corrosion of metals.</li> <li>Pitting corrosion of metals. Atmospheric corrosion of metals. Biocorrosion. Filiform corrosion.</li> <li>Corrosion protection of metals. Principles of metal corrosion protection.</li> <li>Electrochemical protection. Protection of materials by coatings. Protection through design.</li> <li>Knowledge assessment. (Colloquium I)</li> </ol>					
<b>Main literature</b>							

Author	Title, publisher	Year	Pages	
Pavlović M. G., Stanojević, D., Mladenović, S.	Corrosion and protection, University of East Sarajevo, Faculty of Technology, Zvornik	2011	1-476	
Bardal, E.	Corrosion and protection, Springer	2003	1-328	
Covino B.S. Jr., Cramer S.D.	Corrosion: Fundamentals, Testing, and Protection	2003		
Tomić, M., Pavlović, M.G., Malinović, B.	Workbook of corrosion and protection, University of East Sarajevo, Faculty of Technology, Zvornik	2013	1-108	
Additional reading				
Author	Title, publisher	Year	Pages	
Evert D. D. Durning	Corrosion Atlas, 3rd Edition, Elsevier	1997	1-689	
Scullu, J. C.	The Fundamentals of Corrosion, Third Edition, Pergamon Press, N. York-London	1990	1-187	
Atkins, P.W., De Paula, J.	Physical Chemistry, 9th Edition, W.H. Freeman & Co., New York	2002	1-300	
Obligations, assessment methods and grading system	Type of student evaluation		ECTS	Percentage
	Pre-exam obligations			
		Attendance	6	6 %
		laboratory exercises	20	20 %
		Tests/colloquiums	44	44 %
		Final examination (oral)	30	30 %
	Total	100	100 %	
Web page	www.tfzv.ues.rs.ba			
Date	2023			