



Subject card

Subject name and code	Electroplating, PG_00039692						
Field of study	Materials Engineering, Materials Engineering, Materials Engineering						
Date of commencement of studies	February 2022		Academic year of realisation of subject			2021/2022	
Education level	second-cycle studies		Subject group			Optional subject group Subject group related to scientific research in the field of study	
Mode of study	Full-time studies		Mode of delivery			at the university	
Year of study	1		Language of instruction			Polish	
Semester of study	1		ECTS credits			3.0	
Learning profile	general academic profile		Assessment form			assessment	
Conducting unit	Department of Electrochemistry, Corrosion and Materials Engineering -> Faculty of Chemistry						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Andrzej Miszczyk				
	Teachers		dr hab. inż. Andrzej Miszczyk				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	30.0	0.0	0.0	45
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	45		5.0		25.0	75
Subject objectives	learning about basic galvanic technologies, properties of galvanic coatings and their resistance to corrosive conditions in different environments						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	K7_W06	student knows galvanotechnical technologies and is able to analyze the latest achievements in the field			[SW1] Assessment of factual knowledge		
	K7_U04	student knows the rules of functioning of the apparatus for galvanization			[SU1] Assessment of task fulfilment		
	K7_K02	student can predict the consequences of their actions in terms of their impact on the environment and human safety			[SK1] Assessment of group work skills [SK5] Assessment of ability to solve problems that arise in practice		
	K7_W04	student can apply an appropriate metal coating to a specific environment			[SW1] Assessment of factual knowledge		
	K7_U01	student can present results of other work related to subject			[SU1] Assessment of task fulfilment		
Subject contents	Basic galvanic concepts. Electrochemistry of electroplating coating processes. Preparation of the surface for galvanic coatings. Types of galvanic coatings. Selection of coating electroplating. Chemical and electrochemical polishing. One- and multi-layer coatings. Chrome plating. Galvanizing. Tinning. Copper plating. Nickel plating. Silver plating. Alloy coatings. Conversion coatings: phosphate, chromating. Anodizing and aluminum dyeing. Oxidation of steel. Galvanic covering of plastics: electroplating. Schemes of technological processes. Evaluation of the quality of galvanic baths and the quality of galvanic coatings. Ecological problems in electroplating: water management and wastewater treatment. Safety and hygienework in galvanizing plant.						
Prerequisites and co-requisites	Knowledge of the basics of electrochemistry. Knowledge of the basics of corrosion theory. Knowledge of the basics of physical chemistry.						
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	Laboratory exercises		100.0%		40.0%		
	test		60.0%		60.0%		

Recommended reading	Basic literature	Electroplating guide, collective work WNT 2004 (in Polish) A. Wirbilis- Electroplating for craftsmen, WNT 1986 (in Polish) Electroplating: basic principles, processes and practice By Nasser Kanani, Elsevier 2004.
	Supplementary literature	websites of specialized companies
	eResources addresses	
Example issues/ example questions/ tasks being completed	corrosion resistance of zinc coatings in various environments; anodic and cathodic coatings, Watt's bath, conversion coatings - types and their role	
Work placement	Not applicable	