



Subject card

Subject name and code	Surface engineering, PG_00052980						
Field of study	Chemistry in Construction Engineering						
Date of commencement of studies	February 2024	Academic year of realisation of subject			2024/2025		
Education level	second-cycle studies	Subject group			Obligatory subject group 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	2	ECTS credits			3.0		
Learning profile	general academic profile	Assessment form			exam		
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						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	0.0	0.0	30
	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	30		5.0		40.0	75
Subject objectives	to acquaint students with surface engineering technologies and their application in practice						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K7_U07		He can determine the suitability of scientific methods and apparatus to obtain specific information in the field of surface engineering, in particular selected properties of materials.		[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools		
	K7_W07		He has knowledge in the field of materials engineering and related fields. He knows the basics of materials science.		[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects		
	K7_W08		He is able to design surface treatment technologies suitable for a given material used in engineering practice		[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects		
Subject contents	general introduction to surface engineering, purpose and tasks of surface engineering, technology - traditional and modern, the theoretical basis of metal deposition and electroplating, the coating of zinc, copper, nickel, chromium, conversion coatings, application of hot immersion and spraying methods, coating properties and corrosion resistance, building materials surface modification by the use of coating formulations, the formulations of hydrophobic and with migrant inhibitor, PVD and CVD processes, optimization of surface engineering technologies						
Prerequisites and co-requisites	the basics of solid state physics and electrochemistry						
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	test		60.0%		100.0%		
Recommended reading	Basic literature		Tadeusz Burakowski, Tadeusz Wierzchoń Surface Engineering of Metals: Principles, Equipment, CRC W. Gissler, H.A. Jehn, Advanced Techniques for Surface Engineering A.W. Batchelor i inni, Materials degradation and its Control Poradnik galwanotechnika, WNT Warszawa 2009,				
	Supplementary literature		journals in the field of surface engineering				
	eResources addresses		Adresy na platformie eNauczanie:				

Example issues/ example questions/ tasks being completed	test methods for metal coating, properties of nickel coatings, the corrosion resistance of zinc coatings
Work placement	Not applicable