



Subject card

Subject name and code	Surface Science, PG_00059057						
Field of study	Materials Engineering, Materials Engineering, Materials Engineering						
Date of commencement of studies	October 2022		Academic year of realisation of subject			2024/2025	
Education level	first-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	3		Language of instruction			Polish	
Semester of study	5		ECTS credits			2.0	
Learning profile	general academic profile		Assessment form			assessment	
Conducting unit	Division of Electrochemistry and Surface Physical Chemistry -> Institute of Nanotechnology and Materials Engineering -> Faculty of Applied Physics and Mathematics						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Jacek Ryl				
	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		2.0		18.0	50
Subject objectives	The goal of the subject is the presentation of basic problems resulting from the existence of interface between material objects and its surroundings. Discussion of the consequences arising from the existence of surface energy. Analysis of possible applications of surface phenomena in technology. Understanding of problems and benefits resulting from decreasing dimensions of objects with the special emphasis on the semiconductor band structure modification resulting from the surface charge distribution.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	K6_U09	The student is able to present a description of the obtained research results in the area of surface physicochemistry.			[SU5] Assessment of ability to present the results of task		
	K6_K01	The student is aware of the dynamic development of material technologies and the need for continuous deepening of knowledge.			[SK5] Assessment of ability to solve problems that arise in practice		
	K6_W08	The student has knowledge of development trends in materials engineering, in particular regarding technology and the justification for modifying the surface of materials.			[SW1] Assessment of factual knowledge		
	K6_U07	The student is able to propose surface testing methods based on literature data in order to obtain information about practical significance.			[SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment		
	K6_W07	The student has knowledge of the processes occurring at the interphase boundary and the related material properties.			[SW1] Assessment of factual knowledge		

Example issues/ example questions/ tasks being completed	Definition of surface energy and surface tension. Discussion of the surface influence on semiconductor band structure. Surface effects in technology. Adsorption process description. Analysis of reasons of the segregation effect in alloys.
Work placement	Not applicable

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