



Subject card

Subject name and code	, PG_00058690						
Field of study	Materials Engineering, Materials Engineering, Materials Engineering						
Date of commencement of studies	February 2023		Academic year of realisation of subject		2022/2023		
Education level	second-cycle studies		Subject group		Obligatory subject group in the field of study 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	Zakład ceramiki -> Instytut Nanotechnologii i Inżynierii Materiałowej -> Faculty of Applied Physics and Mathematics						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Aleksandra Mielewczyk-Gryń				
	Teachers		dr hab. inż. Aleksandra Mielewczyk-Gryń				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	15.0	0.0	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	The introduction to materials physics and chemistry .						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K7_U02		knows what direction he/she wants to work in the future		[SU4] Assessment of ability to use methods and tools [SU2] Assessment of ability to analyse information		
	K7_W05		know all of the basic methods of solid state physics and chemistry		[SW3] Assessment of knowledge contained in written work and projects [SW2] Assessment of knowledge contained in presentation [SW1] Assessment of factual knowledge		
	K7_K01		understands the need to learn whole his/her life		[SK2] Assessment of progress of work [SK4] Assessment of communication skills, including language correctness		
	K7_W01		has extended knowledge on physics of materials		[SW1] Assessment of factual knowledge		

Subject contents	Introduction		
	Phonons and thermal properties		
	Defect chemistry		
	Electronic properties		
	Semiconductors		
	Transport		
	Superconductivity		
	Optical properties		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	cwiczenia	50.0%	30.0%
	midterm/final test	50.0%	70.0%
Recommended reading	Basic literature	1. Ch. Kittel "Introduction to solid state physics" 2. W. Ashcroft , N. D. Mermin "Solid state physics"	
	Supplementary literature	H Ibach, H. Lüth - Solid State Physics	
	eResources addresses	Adresy na platformie eNauczanie: Fizykochemia ciała stałego 2022/23 - Moodle ID: 28802 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=28802	
Example issues/ example questions/ tasks being completed	- Describe heat capacity in metals - Whats the difference between supercapacitor and ideal capacitor? - Glve the expression for Fermi energy at 0K		
Work placement	Not applicable		