



## Subject card

Subject name and code	, PG_00052078						
Field of study	Nanotechnology						
Date of commencement of studies	October 2020	Academic year of realisation of subject			2021/2022		
Education level	first-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	2	Language of instruction			Polish no		
Semester of study	4	ECTS credits			4.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Instytut Nanotechnologii i Inżynierii Materiałowej -> Faculty of Applied Physics and Mathematics						
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Maria Gazda					
	Teachers	dr inż. Tadeusz Miruszewski prof. dr hab. inż. Maria Gazda dr inż. Kacper Dzierzgowski					
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 Adresy na platformie eNauczanie: Nanomateriały Funkcjonalne - Moodle ID: 19938 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=19938">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=19938</a>						
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		50.0	100	
Subject objectives	Understanding the properties, structure and applications of functional nanomaterials						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	K6_U06	Is able to present in a simple and accurate way technological and scientific problems related to the production and application of functional nanomaterials and to initiate and coordinate interdisciplinary cooperation			[SU5] Assessment of ability to present the results of task		
	K6_W07	Has systematic knowledge of the physical and chemical basics of obtaining functional nanomaterials.			[SW1] Assessment of factual knowledge		
	K6_U09	Has the ability to design and implement functional nanomaterials manufacturing processes.			[SU1] Assessment of task fulfilment		
	K6_W06	Basic knowledge of materials science (size influence on structure and properties)			[SW1] Assessment of factual knowledge		
K6_U10	Is able to predict and assess the potential negative biological and ecological effects of the production of nanomaterials.			[SU3] Assessment of ability to use knowledge gained from the subject			
Subject contents	Introduction: nanomaterials, nanostructures; Nanomaterials and nanostructures with specific functions resulting from the properties: electric; optical; magnetic; other;						

Prerequisites and co-requisites	no		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	laboratory reports	50.0%	40.0%
	written test	50.0%	60.0%
Recommended reading	Basic literature	Nanotechnologia w praktyce, K. Żelechowska	
	Supplementary literature	any scientific literature	
	eResources addresses	Uzupełniająca Nanomateriały Funkcjonalne - Moodle ID: 19938 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=19938">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=19938</a>	
Example issues/ example questions/ tasks being completed	Effect of Size on Melting Point;Optical properties of nanometal;What is superparamagnetism?		
Work placement	Not applicable		