

GDAŃSK UNIVERSITY

Subject card

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Subject name and code	Synthesis methods of nanomaterials, PG_00052029								
Field of study	Nanotechnology								
Date of commencement of studies	October 2022		Academic year of realisation of subject			2022/2023			
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	at the university		
Year of study	1		Language of instruction			English			
Semester of study	2		ECTS credits			4.0			
Learning profile	general academic profile		Assessment form			assessment			
Conducting unit	Zakład fizyki nanomateriałów -> Instytut Nanotechnologii i Inżynierii Materiałowej -> Faculty of Applied Physics and Mathematics								
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Marcin	Łapiński					
	Teachers		dr inż. Marcin	Łapiński					
Lesson types and methods	Lesson type	Lecture	Tutorial	Laboratory	Projec	:t	Seminar	SUM	
of instruction	Number of study hours	15.0	0.0	30.0	0.0		0.0	45	
	E-learning hours inclu	uded: 0.0							
Learning activity and number of study hours	Learning activity Participation ir classes include plan		i didactic Participation in ed in study consultation hours		Self-study		SUM		
	Number of study hours	45		5.0		50.0		100	
Subject objectives	Teach of the basic methods of synthesis of 0,1,2,3 D nanomaterials.								
Learning outcomes	Course outcome		Subject outcome			Method of verification			
	K7_W04		The student has knowledge about the methods of synthesis nanomaterials. Can characterize physical and chemical methods of manufacturing.			[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge			
	K7_U05		The student is able to plan and conduct experiments. Citically analyze results and formulate motivated opinions.			[SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment			
	K7_W02		The student has a deep and detailed knowledge of the selected fields of nanotechnology. Student has also knowledge in the field of related fields of science or technology.			[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge			

Subject contents	Fundamentals of nanotheromodynamic						
	Synthesis methods of Zero-dimensional nanostructures						
	Synthesis methods of One-dimensional nanostructures						
	Synthesis methods of Two-dimensional nanostructures						
	Nanostructures fabricated by physical techniques						
Prerequisites and co-requisites	Basic knowledge in a field of physics and chemistry. Especially knowledge of thermodynamics and diffusion processes.						
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade				
	grade from lecture	51.0%	67.0%				
	grade from laboratory	51.0%	33.0%				
Recommended reading	Basic literature	 [1] Guozhong Cao: Nanostructures and Nanomaterials. Synthesis, properties and applications. Imperial College Press, London, 2011 [2] Lide Zhang, Xiaosheng Fang, Changhui Ye: Controlled Growth of Nanomaterials. World Scientific Publishing Co. 2007 [3] Zheng Cui: Nanofabrication Principles, Capabilities and Limits. Springer. 2008 [4] Microfabrication and Nanomanufacturing. Edited by Mark J. Jackson. CRS. 2006 					
	Supplementary literature	[1] Springer Handbook of Nanotechnology. Edited by Bharat Bhushan. Springer- Verlag Berlin Heidelberg 2010					
	eResources addresses	Adresy na platformie eNauczanie:					
	ESynthesis methods of nanomaterials - Moodle ID: 30185 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=30185						
Example issues/ example questions/ tasks being completed	Synthesis of nanostructures during lab classes						
Work placement	Not applicable						