GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Synthesis methods of nanomaterials, PG_00052029		
Field of study	Nanotechnology		
Date of commencement of studies	October 2025	Academic year of realisation of subject	2025/2026
Education level	second-cycle studies	Subject group	Specialty 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	1	Language of instruction	English
Semester of study	2	ECTS credits	4.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Division Of Nanomaterials Physics -> Institute Of Nanotechnology And Materials Engineering -> Faculty Of Applied Physics And Mathematics -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Marcin Łapiński	
	Teachers	dr hab. inż. Marcin Łapiński	

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

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

Teach of the basic methods of synthesis of 0,1,2,3 D nanomaterials.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_W02] has enhanced, theoretically supported, detailed knowledge of selected branches of nanotechnology and, according to the needs, within the scope of related fields of science and technology.	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.	[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects
[K7_W04] has practical and theoretical knowledge of physical and chemical experimental methods of nanotechnology.	The student has knowledge about the methods of synthesis nanomaterials. Can characterize physical and chemical methods of manufacturing.	[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects
[K7_U05] can plan and conduct experimental and critical research and analyze their results, draw conclusions and formulate reasoned conclusions – within their specialization.	The student is able to plan and conduct experiments. Citically analyze results and formulate motivated opinions.	[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools

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 laboratory	51.0%	33.0%
grade from lecture	51.0%	67.0%

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:

Example issues/ example questions/ tasks being completed	Synthesis of nanostructures during lab classes
Work placement	Not applicable

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