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 2023	Academic year of realisation of subject	2023/2024
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 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 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	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_U05	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
K7_W04	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

<table>
<tr><td>Subject contents</td><td>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</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Basic knowledge in a field of physics and chemistry. Especially knowledge of thermodynamics and diffusion processes.</td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>grade from laboratory</td><td>51.0%</td><td>33.0%</td></tr>
<tr><td>grade from lecture</td><td>51.0%</td><td>67.0%</td></tr>
</table>
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<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>[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</td></tr>
<tr><td>Supplementary literature</td><td>[1] Springer Handbook of Nanotechnology. Edited by Bharat Bhushan. Springer-
Verlag Berlin Heidelberg 2010</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:</td></tr>
</table>
</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>Synthesis of nanostructures during lab classes</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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