GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Experimental Nanotechnology , PG_00057511		
Field of study	Nanotechnology		
Date of commencement of studies	February 2023	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 university
Year of study	1	Language of instruction	English
Semester of study	1	ECTS credits	3.0
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	2.0	28.0	75

Subject objectives

Overview of selected experimental methods used in nanotechnology in the field of synthesis and research properties .

Learning outcomes

Course outcome	Subject outcome	Method of verification
K7_W04	Student is able to describe the physical and chemical methods of the nanomaterials manufacturing.	[SW1] Assessment of factual knowledge
K7_U05	Student is able to list and describe the chemical and physical methods of the production of nanomaterials.	[SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject
K7_W07	The student is able to plan and safety perform experiment	[SW1] Assessment of factual knowledge
K7_K09	The student is able to plan the process of manufacturing nanomaterials.	[SK2] Assessment of progress of work
K7_U02	The student is able to plan and perform out experiment	[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject

Subject contents	The properties of nanomaterials and structure sizes. Methods of preparation : - Methods of bottom-up , top-down, - Methods of preparation of 0D, 1D, 2D, 3D structures , Methods of study: - Microscopic methods , - Methods of structure studies, - Spectroscopic methods, especially luminescence measurements.
Prerequisites and co-requisites	The physical basis of nanotechnology - NAN1B007 Physical chemistry of surfaces - NAN1B016

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Examination of the lecture	60.0%	60.0%
laboratory assessment	80.0%	40.0%

Recommended reading

Basic literature	Nanostructures and Nanomaterials. Synthesis, Properties and Applications. Imperial College Press. Guozhong Gao. 2004. Introduction to Nanotechnology. Ch. P. Poole Jr., F. J. Owens. Wiley. 2003. Nanoelectronics and Information Technology. Adv.Electronic Materials and Novel Devices. Reiner Waser (Ed.) Wiley-VCH. 2003.
Supplementary literature	Introduction to Nanotechnology. Ch. P. Poole Jr., F. J. Owens. Wiley. 2003. Nanoelectronics and Information Technology. Adv.Electronic Materials and Novel Devices. Reiner Waser (Ed.) Wiley-VCH. 2003.
eResources addresses	Adresy na platformie eNauczanie: Experimental nanotechnology / Nanotechnologia Eksperymentalna - Moodle ID: 30184 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=30184

Example issues/ example questions/ tasks being completed	Methods of synthesis of luminescence thin films. Methods of test properties of glasses and oxide thin films.
Work placement	Not applicable