GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Master's thesis, PG_00070978						
Field of study	Nanotechnology						
Date of commencement of studies	February 2027		Academic year of realisation of subject	2027/2028			
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	2		Language of instruction	Polish			
Semester of study	3		ECTS credits	14.0			
Learning profile	general academic profile		Assessment form	assessment			
Conducting unit	Institute of Nanotechnology and Materials Engineering -> Faculty of Applied Physics and Mathematics -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Agnieszka Witkowska					
	Teachers	dr hab. inż. Agnieszka Witkowska					
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	0.0	125.0	0.0	125
	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	125		0.0	225.0	350	
Subject objectives	The aim of the course is to prepare the student to address and solve scientific and technical problems, to produce comprehensive and reliable research reports, and to communicate the results of their own research through oral presentations and/or written publications.						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_U07] has advanced skills in disseminating knowledge and communicating the results of own research in the form of oral presentations or written works in Polish and English	The student has advanced skills in preparing a research report in English and delivering an oral presentation that demonstrates the progress achieved at successive stages of the master's thesis project.	[SU5] Assessment of ability to present the results of task
[K7_W02] has in-depth, theoretically grounded and detailed knowledge of phenomena, methods, and theories related to nanotechnology, as well as of related and allied fields of science or engineering	The student has advanced, theoretically grounded knowledge of phenomena, methods, and theories related to nanotechnology and its related scientific and technical fields, relevant to the analysed research problem, enabling independent planning and execution of research within the master's thesis project.	[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects
[K7_K02] is able to initiate and systematically work on long-term scientific and technical projects with clearly defined cognitive and practical objectives. Recognizes their economic aspects and their impact on the surrounding environment	The student begins work on the master's thesis project already in the second semester and, by carrying it out through the third semester, acquires experience and skills related to planning and organizing systematic work on a scientific or technical problem or project of a long-term nature.	[SK3] Assessment of ability to organize work
[K7_U01] is able to formulate hypotheses, plan and conduct experimental research, critically analyze results, verify hypotheses, draw conclusions, and formulate well-founded opinions within nanotechnology and related physical and natural sciences. Recognizes economic and non-technical aspects of the activities performed	The student is able to analyse the problem posed in the master's thesis project and develop a proposal for its solution or implementation based on independently collected and processed information from the literature, databases, and other available sources (including those in English).	[SU2] Assessment of ability to analyse information

Subject contents

Course content – project
Implementation of research tasks related to the selected topic of the diploma project in the team: student-project supervisor.

Preparation of the MSc thesis manuscript in accordance with suitable standards and general guidelines.

Preparation for the masters thesis defense, including discussion of the applied methodology, the results of the students own work and their interpretation, as well as verification of the knowledge acquired throughout the entire study cycle.

Prerequisites and co-requisites

Completed and passed courses from the entire study cycle

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Preparation of the diploma MSc thesis	100.0%	40.0%
Diploma examination covering the entire curriculum	50.0%	40.0%
Oral presentation of the diploma project results and discussion	50.0%	20.0%

Recommended reading

Basic literature	[1] Nicholas Walliman, Research Methods, The Basics, Taylor & Francis Group, London and New York, 2011 [2] Hugh G. Gauch Jr., Scientific Methods in Brief, Cambridge University Press, 2012
Supplementary literature	[1] Guidelines for Authors of diploma thesis and diploma projects for higher education studies at Gdańsk University of Technology written in english and polish [2] Scientific literature and specialist reports related to the diploma project

	eResources addresses	
Example issues/ example questions/ tasks being completed	1. Implementation of a hybrid MD+CVHD method and its application in studying the chemical vapor deposition of graphene 2. Removal of heavy metal ions from wastewater using regenerable capsules based on nanostructured MgCaVO sorbents 3. Non-stoichiometric electrodes with exsolved catalytically active oxide nanoparticles 4. Semiconductor p-n and metal-semiconductor junctions: properties and applications. 5. Synthesis methods of nanomaterials. 6. Methods for imaging nanostructures: types, principles of operation, limitations. 7. Methods of nanomaterials physico-chemical properties examination.	
Practical activites within the subject	Not applicable	

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