



Subject card

Subject name and code	, PG_00052106						
Field of study	Nanotechnology						
Date of commencement of studies	October 2023		Academic year of realisation of subject		2026/2027		
Education level	first-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	4		Language of instruction		Polish		
Semester of study	7		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 -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Marcin Łapiński				
	Teachers		dr hab. inż. Marcin Łapiński				
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	15.0	30.0	0.0	45
	E-learning hours included: 0.0						
	eNauczanie source addresses: Moodle ID: 8307 Nanowarstwy i nanopowłoki https://enauzanie.pg.edu.pl/2025/course/view.php?id=8307						
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	The aim of the course is to familiarize students with fabrication techniques and methods used for the analysis of surface, structure, as well as optical and electrical properties applied in thin-film technology. Special attention will be given to the use of thin films in modern medical and analytical technologies						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	K6_U02	The student is able to solve scientific and technological problems related to thin films	[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU5] Assessment of ability to present the results of task
	K6_U09	The student is able to plan and conduct an experiment, paying particular attention to energy consumption and other environmental aspects	[SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information
	K6_W07	The student has theoretical bacground, especially including knowledge of the basics of thermodynamics, crystallography and chemistry	[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects
	K6_K04	The student is able to lead the work of a team designing a device and has sufficient competence to take on the role of an expert	[SK1] Assessment of group work skills [SK2] Assessment of progress of work [SK3] Assessment of ability to organize work [SK4] Assessment of communication skills, including language correctness [SK5] Assessment of ability to solve problems that arise in practice
Subject contents	Course content – laboratory Laboratories classes: 1. Overview of basic thin film manufacturing methods, 2. Measurement and analysis of properties of the metallic thin films, Project classes: 1. Applications of thin films in medicine and analytics 2. Design of a sensor based on thin film technology,		
Prerequisites and co-requisites	Basic knowledge of thermodynamics, crystallography, as well as physics and chemistry		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	lab report	51.0%	50.0%
	project presentation	51.0%	50.0%
Recommended reading	Basic literature	Books and papers. Like eg. 1. Krishna Seshan, "Handbook of Thin Film Deposition" 2. Hartmut Frey, "Handbook of Thin Film Technology" 3. Catherine Picart et al. "Layer-by-layer films for biomedical applications"	
	Supplementary literature	Technological news from journals	
	eResources addresses		
Example issues/ example questions/ tasks being completed	Design of a biosensor based on thin-film technology Fabrication of a biocompatible thin film		
Practical activites within the subject	Not applicable		

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