



Subject card

Subject name and code	Dielectrics, PG_00045527						
Field of study	Nanotechnology						
Date of commencement of studies	October 2023	Academic year of realisation of subject			2024/2025		
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			English		
Semester of study	4	ECTS credits			2.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Division of Electrochemistry and Surface Physical Chemistry -> Institute of Nanotechnology and Materials Engineering -> Faculty of Applied Physics and Mathematics						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Natalia Wójcik					
	Teachers	dr hab. inż. Natalia Wójcik					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0	15.0	30
	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	30	0.0		0.0	30	
Subject objectives	Knowledge of modern dielectric materials and technological issues related to their application.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	K7_W02	The student knows the theoretical foundations of the science of dielectrics. The student suggests basic methods of studying the properties of dielectric materials.			[SW1] Assessment of factual knowledge		
	K7_K04	The student presents the developed topic with particular emphasis on the electrical properties of dielectrics and their modern applications.			[SK4] Assessment of communication skills, including language correctness		
Subject contents	Electrical properties of dielectrics - basic concepts. Macroscopic properties of dielectrics. Electrical properties of dielectrics - dielectric polarization mechanisms. Mechanisms of electrical conduction in dielectrics. Dielectric in a variable electric field - description in the frequency domain. Dielectric in a variable electric field - description in the time domain. Measurements of electrical parameters of dielectrics. Impedance spectroscopy in practice. Dielectrics with special properties. Basic applications of dielectrics.						
Prerequisites and co-requisites							
Assessment methods and criteria	Subject passing criteria	Passing threshold			Percentage of the final grade		
	seminar	50.0%			50.0%		
	lecture	50.0%			50.0%		
Recommended reading	Basic literature	DOI https://doi.org/10.1016/C2017-0-03281-0 Electronic Materials Principles and Applied Science 2019, Author: Yuriy M. Poplavko					

	Supplementary literature	https://doi.org/10.1016/B978-0-12-803581-8.04143-6 Ferroelectrics and Their Applications S.M. Said, M.F.M. Sabri, F. Salleh, Reference Module in Materials Science and Materials Engineering 2017
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	List and explain the mechanisms of polarization in dielectrics.	
Work placement	Not applicable	

Document generated electronically. Does not require a seal or signature.