



Subject card

Subject name and code	Physics II, PG_00069011						
Field of study	Cosmetic technologies						
Date of commencement of studies	October 2025	Academic year of realisation of subject			2025/2026		
Education level	first-cycle studies	Subject group			Obligatory subject group in the field of study		
Mode of study	Full-time studies	Mode of delivery			at the university		
Year of study	1	Language of instruction			Polish		
Semester of study	2	ECTS credits			3.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Division of Ceramics -> 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. Sebastian Wachowski				
	Teachers		dr hab. inż. Sebastian Wachowski dr inż. Michał Winiarski				
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	20.0	10.0	0.0	0.0	0.0	30
	E-learning hours included: 0.0						
	eNauczanie source addresses: Moodle ID: 3697 Fizyka II dla Technologii Kosmetycznych https://enauczanie.pg.edu.pl/2025/course/view.php?id=3697						
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		5.0		40.0	75
Subject objectives	The aim of the course is to familiarize students with the basic principles of physics necessary to understand the chemical and electrochemical processes used in cosmetic technologies.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_W01] defines the phenomena, processes and physicochemical laws used to produce utility goods and provide services		knows and understands the basics of electricity, magnetism, thermodynamics and modern physics and understands their role in modern production technology.		[SW1] Assessment of factual knowledge		
	[K6_W02] explains the structure and functions of cosmetic raw materials and methods and instruments for determining their quantity, quality and activity		through knowledge of physical principles, is able to explain the principles underlying the operation of measuring instruments and the internal structure of cosmetic raw materials.		[SW1] Assessment of factual knowledge		
Subject contents	Course content – lecture The lecture covers theoretical topics in the following areas: 1. Electrostatics, direct current 2. Magnetism, alternating current 3. Thermodynamics, gas and liquid physics, transport phenomena 4. Modern physics: quantum mechanics, fundamentals of matter structure and crystallography						
	Course content – exercises The content of the tutorials is thematically similar to the lectures, but includes accounting issues.						
Prerequisites and co-requisites							
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	Theory test		50.0%		50.0%		
	Tutorials test		50.0%		50.0%		

Recommended reading	Basic literature	Hernan, Kalestyński, Widomski, Podstawy fizyki dla kandydatów na uczelnie wyższe i studentów, PWN, 2009 Massalski, Massalska, Fizyka dla inżynierów PWN 2018
	Supplementary literature	Fizyka dla uczelni wyższych, OpenStax, podręcznik online: https://openstax.pl/szczegoly-ksiazki?book=Fizyka_dla_szk%C3%B3%C5%82_wy%C5%BCszych_tom_1
	eResources addresses	
Example issues/ example questions/ tasks being completed	<ol style="list-style-type: none"> 1. State the second law of thermodynamics. 2. Explain the microscopic model of electrical conduction. 3. Calculate the resonance frequency of an RLC system. 4. Calculate the energy of a particle in a potential well. 	
Practical activities within the subject	Not applicable	

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