

。 GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Fundamentals of materials engineering I, PG_00058330								
Field of study	Hydrogen Technologies and Electromobility								
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			
						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			Polish			
Semester of study	1		ECTS credits			3.0			
Learning profile	general academic profile		Assessment form			assessment			
Conducting unit	Department of Biomedical Engineering -> Faculty of Electronics Telecommunications and Informatics -> Wydziały Politechniki Gdańskiej						rmatics ->		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Sebastian Molin							
	Teachers		dr hab. inż. Sebastian Molin						
			dr inż. Kacper Jurak						
			mgr inż. Justyna Ignaczak						
Lesson types and methods	Lesson type	Lecture	Tutorial	Laboratory	Projec	t	Seminar	SUM	
of instruction	Number of study hours	30.0	0.0	30.0	0.0		0.0	60	
	E-learning hours included: 0.0								
Learning activity and number of study hours	Learning activity Participation ir classes includ plan		i didactic Participation in ed in study consultation hours		Self-study SUM				
	Number of study 60 hours			3.0		12.0		75	
Subject objectives	The aim of the lecture is to let the students familiarize with basic materials properties of classical and modern engineering materials.								
Learning outcomes	Course outcome Subject outcome Method of verifie					ification			
	[K6_W04] knows the properties of materials used in solving simple engineering tasks related to the field of study, in particular has knowledge in the field of materials science and is able to relate the properties of materials with their structure and composition, knows the theoretical description of phenomena occurring in materials subjected to external factors		The student knows the basic properties of materials.			[SW1] Assessment of factual knowledge			
	[K6_K02] can work in a group taking on different roles in it		Student solves simple technical problems; Practical knowledge of basic experimental instrumentation.			[SK1] Assessment of group work skills [SK5] Assessment of ability to solve problems that arise in practice			
	[K6_U01] Is able to obtain information from literature, databases and other sources, integrate them, interpret them and draw conclusions and formulate opinions; has the ability to self- educate m.in. in order to improve professional competences		The student critically analyzes the information presented in popular science and specialist literature.			[SU3] Assessment of ability to use knowledge gained from the subject			

Subject contents							
	 History of materials Materials categories Bonding in materials Strength of materials Plastic properties of materials Friction properties Thermal phenomena Diffusion Oxidation, corrosion, materials degradation Electrical properties Magnetic properties Optical properties Engineering materials and design Microscopic and macroscopic properties Materials and the environment 						
Prerequisites and co-requisites							
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade				
		50.0%	70.0%				
		60.0%	30.0%				
Recommended reading	Basic literature	Materials science and engineering: an introduction, 10th edition, Callister, Rethwisch, Wiley					
		Inżynieria materiałowa, Blicharski, PWN, 2014					
	Supplementary literature	Websites with interactive educational resources: e.g. https:// www.doitpoms.ac.uk/index.php					
	eResources addresses						
Example issues/ example questions/ tasks being completed	 Please describe the types of atomic bonding forces. Define the Young modulus and plot properties of brittle and elastic materials. 						
Work placement	Not applicable						

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