



## Subject card

Subject name and code	, PG_00071260						
Field of study	Mechanical Engineering						
Date of commencement of studies	October 2024	Academic year of realisation of subject			2025/2026		
Education level	first-cycle studies	Subject group					
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			2.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Division of Biomaterials Technology -> Institute of Manufacturing and Materials Technology -> Faculty of Mechanical Engineering and Ship Technology -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Michał Bartmański				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	0.0	0.0	30
	E-learning hours included: 0.0						
	eNauczanie source addresses: Moodle ID: 4904 Mikrokursy / Uczelnie Przyszłości / Michał Bartmański <a href="https://enauczanie.pg.edu.pl/2025/course/view.php?id=4904">https://enauczanie.pg.edu.pl/2025/course/view.php?id=4904</a>						
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	The aim of the course is to familiarize students with modern methods for investigating the properties of biomaterials and evaluating the performance of implants in terms of their structure, mechanical strength, functionality, and interaction with the biological environment. The course develops practical competencies in selecting appropriate research tools, interpreting results, and critically analyzing design solutions of implant components and systems.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_W03] possesses and is able to practically apply the knowledge on the construction, properties and testing methods of construction materials		The student understands the structure as well as the physical, mechanical, and biological properties of biomaterials used in implantology and is able to apply appropriate research methods to evaluate their quality and suitability for medical applications.		[SW3] Assessment of knowledge contained in written work and projects		
	[K6_U09] is able to plan the manufacturing, assembly and quality control processes of typical constructions and mechanical devices, estimating their costs		The student is able to plan the process of quality assessment of biomaterials and implants, select appropriate control methods, and estimate the costs associated with testing, validation, and implementation of biomedical components.		[SU1] Assessment of task fulfilment		
Subject contents	Course content – lecture The course content includes introducing students to the theoretical aspects of methods used to investigate the structure, mechanical strength, and functionality of biomaterials and implants using engineering tools. Course content – laboratory Students will become familiar with techniques such as microscopic analysis methods, mechanical testing, degradation tests, and methods for assessing the biocompatibility and reliability of implants. During the course, students learn how to select appropriate research methods for specific applications, analyze and interpret results, and compare design solutions from both technical and economic perspectives.						
Prerequisites and co-requisites							
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	Raport		56.0%		100.0%		

Recommended reading	Basic literature	Polish and English language scientific publications in renowned journals such as Polymer Testing, Biomaterials, Acta Biomaterialia, Applied Surface Science and related.
	Supplementary literature	-
	eResources addresses	
Example issues/ example questions/ tasks being completed	Physical methods of biomaterials research.Chemical methods of testing biomaterials.Biological methods of biomaterials research.Mechanical methods of biomaterials research.	
Practical activities within the subject	Not applicable	

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