



Subject card

Subject name and code	, PG_00065670						
Field of study	Mechanical and Medical Engineering						
Date of commencement of studies	February 2024		Academic year of realisation of subject		2024/2025		
Education level	second-cycle studies		Subject group				
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		5.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Zakład Technologii Biomateriałów -> Institute of Manufacturing and Materials Technology -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Marcin Wekwejt				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	30.0	0.0	0.0	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		5.0		90.0	125
Subject objectives	The aim of the course is to develop skills in analyzing and processing scientific data, with particular emphasis on mechanical-medical engineering. Student will be introduced to the potential applications of advanced information and communication technologies and will learn fundamental analytical, simulation, and experimental methods for solving engineering tasks in the context of conducting scientific experiments. Additionally, she/he will acquire practical knowledge enabling the statistical processing of results obtained from various studies. Emphasis will also be placed on the critical evaluation of results and their presentation in the form of scientific reports.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_U04] He/she can use programming-communicative techniques concerning to the scope of engineering tasks		The student is able to utilize advanced information and communication technologies, as well as computational methods, for the analysis and processing of research results.		[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task		
	[K7_W01] He/she has broad knowledge referring to the high level math to solve numerical problems and tasks related to planning and to work out results of research in the scope of the field of study of mechanical-medical engineering		The student possesses advanced mathematical knowledge for analyzing research results and solving computational problems related to biomedical engineering.		[SW3] Assessment of knowledge contained in written work and projects		
	[K7_U06] He/she uses analytical engineering, numerical and experimental methods to state and solve the tasks		The student is able to apply analytical, simulation, and experimental methods to design scientific research and solve engineering tasks.		[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task		
Subject contents	The course focuses on a practical approach to developing scientific experiments and analyzing research results. Students will have the opportunity to gain hands-on skills in the following areas: (1) Introduction to scientific data analysis, (2) Advanced information and communication technologies in result analysis, (3) Analytical and simulation methods in engineering research, (4) Experimental methods in engineering research, (5) Planning and processing research results, (6) Developing and presenting results in the form of scientific reports, (7) Critical evaluation of research outcomes.						
Prerequisites and co-requisites							

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
		75.0%	100.0%
Recommended reading	Basic literature	1. Creswell, J. W., & Creswell, J. D. Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. SAGE Publications, 2017. 2. Patten, M. L., & Newhart, M. Understanding Research Methods: An Overview of the Essentials. Routledge, 2018. 3. Flick, U. An Introduction to Qualitative Research. SAGE Publications, 2018.	
	Supplementary literature	1. Yin, R. K. Case Study Research and Applications: Design and Methods. SAGE Publications, 2018. 2. Tufte, E. R. The Visual Display of Quantitative Information. Graphics Press, 2001. 3. Sheskin, D. J. Handbook of Parametric and Nonparametric Statistical Procedures. CRC Press, 2011.	
	eResources addresses	Adresy na platformie eNauczenie:	
Example issues/ example questions/ tasks being completed	<ul style="list-style-type: none">- What are the key types of scientific data used in mechanical-medical engineering?- Creating an interactive report of results using computational tools.- Which simulation methods are most suitable for modeling the properties of biomaterials?- Conducting an experimental project to investigate the influence of parameters on material properties.- Performing statistical analysis on obtained data and interpreting the results.- Which techniques should be applied to assess the reliability and validity of the results?- Preparing a brief presentation of research results along with their discussion.		
Work placement	Not applicable		

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