



Subject card

Subject name and code	Planning of experimental research, PG_00065008						
Field of study	Mechanical and Medical Engineering						
Date of commencement of studies	February 2025		Academic year of realisation of subject			2024/2025	
Education level	second-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			2.0	
Learning profile	general academic profile		Assessment form			assessment	
Conducting unit	Zakład Mechaniki Stosowanej i Biomechaniki -> Institute of Mechanics and Machine Design -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Wiktoria Wojnicz				
	Teachers		dr inż. Grzegorz Rotta dr hab. inż. Wiktoria Wojnicz				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	15.0	0.0	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		6.0		14.0	50
Subject objectives	The aim of the subject is to present methods used to plan experimental testing and elaborate the results of the testing						
Learning outcomes	Course outcome		Subject outcome			Method of verification	
	[K7_W03] has structured and well-founded knowledge covering issues in the field of medical engineering allowing to design medical devices, rehabilitation systems and to formulate research procedures		A student can formulate a research hypothesis that covers a scope of design of medical device (or rehabilitation systems), and use statistical toolbox to verify this hypothesis			[SW3] Assessment of knowledge contained in written work and projects	
	[K7_K101] acknowledges the importance of knowledge related to the field of study in solving cognitive and practical problems, critically assessing the information obtained		A student can formulate a hypothesis on the base of acquired knowledge related to the medical engineering			[SK2] Assessment of progress of work [SK5] Assessment of ability to solve problems that arise in practice	
	[K7_U02] formulates hypotheses to test research problems in the field of medical engineering		On the base of acquired knowledge related to the medical engineering a student can formulate a hypothesis, apply proper methods of testing and draw conclusions			[SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task	

Subject contents	Lectures (15h) (DSc PhD Wiktoria Wojnicz) Describing statistics. Random variables. Normal distribution. T-Student distribution. Chi-squared distribution.Parametric estimation.Chosen statistical tests: Normal distribution testing, Homogeneity of variances testing, T-Student testes, Nonparametric tests for independent samples Nonparametric tests for dependent samples. ANOVA, Kruskal-Wallis test and median test.Linear regression. Multilinear regression. Linearized nonlinear regression (for chosen functions). Nonlinear estimation. Time series. Methods of prediction Tutorials (15h) (PhD Grzegorz Rotta) The scope covers chosen topics from Lectures.Test. Repeat test		
Prerequisites and co-requisites	Math		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	pass of the tutorials	50.0%	50.0%
	pass of the lectures	50.0%	50.0%
Recommended reading	Basic literature	M.Rabiej, Statystyka z programem Statistica, Helion, 2012 StatSoft. Poradnik statystyczny. https://www.statsoft.pl/textbook/stathome_stat.html?https%3A%2F%2Fwww.statsoft.pl%2Ftextbook%2Fadvans1.html	
	Supplementary literature	Literatures related to the mathematical statistics	
	eResources addresses	Adresy na platformie eNauczanie:	
	Example issues/ example questions/ tasks being completed	Assess the minimum number of samples by considering the given threshold p	
Work placement	Not applicable		

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