



## Subject card

Subject name and code	Planning of experimental research, PG_00057484						
Field of study	Mechanical and Medical Engineering						
Date of commencement of studies	February 2023	Academic year of realisation of subject			2022/2023		
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 hab. inż. Wiktoria Wojnicz dr inż. Grzegorz Rotta				
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		3.0		17.0	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_W05] He/she has in-depth knowledge related to the methods and techniques used in medicine	The student can formulate hypothesis on the base of acquired knowledge related to the methods and technologies applied in medicine			[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects		
	[K7_K03] He/she can analyze and realize given tasks proposing entrepreneur and creative activities	The student can state the problem to test, assess the testing group, perform the testing, elaborate the results and test the hypothesis			[SK1] Assessment of group work skills [SK2] Assessment of progress of work		
	[K7_U08] He/she can formulate and verify hypotheses for simple engineering problems and research	The student can formulate hypothesis, choose and apply a method to verify this hypothesis and draw conclusions			[SU1] Assessment of task fulfilment [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	<b>Lectures (15h) (DSc PhD Wiktoria Wojnicz)</b> 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 samplesANOVA, Kruskal-Wallis test and median test.Linear regressionMultilinear regressionLinearized nonlinear regression (for chosen functions). Nonlinear estimation. Time series. Methods of prediction <b>Tutorials (15h) (PhD Grzegorz Rotta)</b> The scope covers chosen topics from LecturesTestRepeat 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. <a href="https://www.statsoft.pl/textbook/stathome_stat.html?https%3A%2F%2Fwww.statsoft.pl%2Ftextbook%2Fadvans1.html">https://www.statsoft.pl/textbook/stathome_stat.html?https%3A%2F%2Fwww.statsoft.pl%2Ftextbook%2Fadvans1.html</a>	
	Supplementary literature	Literatures related to the mathematical statistics	
	eResources addresses	Adresy na platformie eNauczanie: Planowanie badań doświadczalnych, Wykład, IMM II, letni 2022-2023 (PG_00057484) - Moodle ID: 28920 <a href="https://enauzanie.pg.edu.pl/moodle/course/view.php?id=28920">https://enauzanie.pg.edu.pl/moodle/course/view.php?id=28920</a> Planowanie badań doświadczalnych - Moodle ID: 29811 <a href="https://enauzanie.pg.edu.pl/moodle/course/view.php?id=29811">https://enauzanie.pg.edu.pl/moodle/course/view.php?id=29811</a>	
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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