GDAŃSK UNIVERSITY OF TECHNOLOGY

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 2026	Academic year of realisation of subject	2025/2026
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	Division of Applied Mechanics and Biomechanics -> Institute of Mechanics and Machine Design -> Faculty of Mechanical Engineering and Ship Technology -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Wiktoria Wojnicz	
	Teachers		

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_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	[SU5] Assessment of ability to present the results of task [SU4] Assessment of ability to use methods and tools [SU2] Assessment of ability to analyse information
[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	[SK5] Assessment of ability to solve problems that arise in practice [SK2] Assessment of progress of work
[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

<table>
<tr><td>Subject contents</td><td>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</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Math</td></tr>
<tr><td>Assessment methods and criteria</td><td><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>pass of the lectures</td><td>50.0%</td><td>50.0%</td></tr>
<tr><td>pass of the tutorials</td><td>50.0%</td><td>50.0%</td></tr>
</table></td></tr>
<tr><td>Recommended reading</td><td><table>
<tr><td>Basic literature</td><td>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</td></tr>
<tr><td>Supplementary literature</td><td>Literatures related to the mathematical statistics</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
</table></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>Assess the minimum number of samples by considering the given threshold p</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
</table>

Document generated electronically. Does not require a seal or signature.