GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	MATHEMATICAL STATISTICS, PG_00066518		
Field of study	STATYSTYKA MATEMATYCZNA		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2025/2026
Education level	first-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	Part-time studies	Mode of delivery	at the university
Year of study	2	Language of instruction	Polish
Semester of study	3	ECTS credits	6.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Department of Statistics and Econometrics -> Faculty of Management and Economics -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Krzysztof Świetlik	
	Teachers	dr inż. Krzysztof Świetlik	

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	16.0	0.0	16.0	0.0	0.0	32

E-learning hours included: 0.0

eNauczanie source addresses:

Moodle ID: 1157 STATYSTYKA MATEMATYCZNA NS zima 25/26
https://enauczanie.pg.edu.pl/2025/course/view.php?id=1157

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	32	6.0	112.0	150

Subject objectives

Preparation of students to apply methods of mathematical statistics for data analysis and to support decision-making processes, based on knowledge of random variable distributions, estimation, and hypothesis testing in the context of economic data analysis and business decision-making.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W05] Possesses advanced knowledge of data integration from multiple sources and advanced analytical methods, enabling the analysis of complex economic problems.	knows and understands mathematical statistics methods in the context of analyzing economic data from various sources.	[SW1] Ocena wiedzy faktograficznej
[K6_U07] Applies advanced information technologies to enhance data analysis and decision-making processes.	is able to use statistical software to process and analyze data, using statistical methods to support decisions.	[SU4] Ocena umiejętności korzystania z metod i narzędzi [SU2] Ocena umiejętności analizy informacji

Subject contents

Population and sample.
Basic rules of probability. Bayes' theorem.
Random variables, expected value, variance.
Distributions of discrete and continuous random variables.
Sample distributions. Point and interval estimation.
Testing statistical hypotheses. Significance level and test power.
Statistical tests and confidence intervals for one mean/proportion.
Statistical tests for two means/proportions.
Chi-square test.
Analysis of variance.
Tests of normality of distribution.
Non-parametric tests.
Tests in linear regression models

Prerequisites and co-requisites

probability theory, descriptive statistics

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Final Exam	60.0%	50.0%
	Calculation and decision-making tasks (test 1).	60.0%	25.0%
	Calculation and decision-making tasks (test 2).	60.0%	25.0%
Recommended reading	Basic literature	Wickham, H., Grolemund, G. (2017). R for Data Science. Import, Tidy, Transform, Visualize, and Model Data, O'Reilly. Ramachandran, K., Tsokos, C. P. (2020). Mathematical Statistics with Applications in R, Elsevier LTD.	
	Supplementary literature	Field, Z., Miles, J. (2022). Discovering Statistics Using R. SAGE Publications Ltd.	
	eResources addresses		
Example issues/ example questions/ tasks being completed	A calculus task in probability and central limit theorems. A calculus task in point and interval estimation. Testing of parametric hypotheses. Testing of non-parametric hypotheses. Examination - theoretical issues.		
Practical activites within the subject	Not applicable		

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