GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	MATHEMATICAL STATISTICS, PG_00066476		
Field of study	Economic Analytics		
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	Full-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		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Karol Flisikowski	
	Teachers		

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	30.0	0.0	0.0	60

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	60	6.0	84.0	150

Subject objectives

Selects and uses appropriate statistical methods to analyze data, using statistical software to process and interpret the results.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U07] Applies advanced information technologies to enhance data analysis and decision-making processes.	uses statistical software to improve analysis of mass data to support decision-making processes	[SU4] Assessment of ability to use methods and tools [SU2] Assessment of ability to analyse information
[K6_W05] Possesses advanced knowledge of data integration from multiple sources and advanced analytical methods, enabling the analysis of complex economic problems.	integrates data from multiple sources and, using a variety of statistical methods, obtains results usable in practical multidisciplinary applications	[SW1] Assessment of factual knowledge

Subject contents

Population and sample.
Distributions of discrete and continuous random variables.
Basic statistics and their distributions.
Estimators and their properties.
Point estimation.
Interval estimation.
Testing of statistical hypotheses.
Significance level and power of a test.
Parametric tests for one-dimensional populations.
Parametric tests for two-dimensional populations.
Tests for multidimensional populations.
ANOVA. ANCOVA.
MANOVA. MANCOVA.
Nonparametric tests.
Goodness of fit test. Normality tests.
Chi-square test of independence.
Randomness tests.
Sign tests.
The runs test.

Prerequisites and co-requisites

probability theory, descriptive statistics

<table>
<tr><td>Assessment methods and criteria</td><td colspan="3"><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Laboratory - Tests and Quizzes</td><td>60.0%</td><td>50.0%</td></tr>
<tr><td>Lecture - Final Exam</td><td>60.0%</td><td>50.0%</td></tr>
</table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td colspan="2">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.</td></tr>
<tr><td>Supplementary literature</td><td colspan="2">Field, Z., Miles, J. (2022). Discovering Statistics Using R. SAGE Publications Ltd.</td></tr>
<tr><td>eResources addresses</td><td colspan="2">Adresy na platformie eNauczanie:</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="3">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.</td></tr>
<tr><td>Work placement</td><td colspan="3">Not applicable</td></tr>
</table>

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