



## Subject card

Subject name and code	MATHEMATICAL STATISTICS, PG_00058502						
Field of study	Economic Analytics						
Date of commencement of studies	October 2023	Academic year of realisation of subject			2024/2025		
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	Katedra Statystyki i Ekonometrii -> 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		15.0		75.0	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] uses information technologies to improve 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] integrates data from multiple sources to analyze 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						

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Laboratory - Tests and Quizzes	60.0%	50.0%
	Lecture - Final Exam	60.0%	50.0%
Recommended reading	Basic literature	Wickham, H., Golemund, 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	Adresy na platformie eNauczanie:	
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.		
Work placement	Not applicable		