

。 GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Descriptive Statistics, PG_00068481							
Field of study	Engineering Management							
Date of commencement of studies	October 2025		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 (on-line)		Mode of delivery			at the university		
Year of study	1		Language of instruction			Polish		
Semester of study	2		ECTS credits			4.0		
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	Subject supervisor							
of lecturer (lecturers)	Teachers				-			
Lesson types and methods	Lesson type	Lecture	Tutorial	Laboratory	Projec	t	Seminar	SUM
of instruction	Number of study hours	16.0	0.0	16.0	0.0		0.0	32
	E-learning hours inclu	ided: 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	32 4.0			64.0		100	
Subject objectives	Selects an appropriate methodology for testing regularities occurring in mass processes, using statistical software to process data and interpret obtained results.							
Learning outcomes	Course outcome		Subject outcome			Method of verification		
	[K6_U07] uses advanced information technologies to enhance data analysis and management processes.		is able to use statistical software to enhance the analysis of large datasets, supporting decision- making processes.			[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment		
	[K6_W02] possesses advanced knowledge of methods and techniques that enable precise formulation and effective problem solving.		has the knowledge to correctly formulate a problem, collect data, choose appropriate methods of solution, and interpret results			[SW3] Assessment of knowledge contained in written work and projects		

Subject contents	Population and sample				
	Full and partial tests				
	Random and non-random selection methods				
	Classification of statistical characteristics				
	The concept of a random variable and basic information about distributions (discrete, continuous)				
	Importance of measures of central tendency				
	Differences between classic and positional measures				
	Arithmetic mean, harmonic mean, median, dominant, quartiles, percentiles				
	Importance of measures of variation				
	Variance, standard deviation, coefficient of variation, quadrant deviation, positional coefficient of variation, range, decile range				
	Box-and-whisker plot				
	Importance of asymmetry measures				
	Third central moment, asymmetry coefficient, positional asymmetry coefficient				
	Examples of asymmetric distributions				
	Importance of measures of distribution flattening				
	Fourth central moment, kurtosis, positional concentration coefficient				
	Statistical series				
	Histogram				
	Distributor				
	Central Limit Theorem				

Verification of statistical hypotheses introductory information
Type I and II error Test significance level
Practical applications of correlation analysis
Apparent correlation
Functional dependence and stochastic dependence
Covariance, Pearson's linear correlation coefficient, Spearman's rank correlation coefficient, Kendall's tau coefficient, gamma coefficient, Pearson's correlation relations
Scatterplot
Practical applications of the analysis of the interdependence of quality features
Contingency tables
Chi-square test of independence
V-Cramer coefficient,
Difference between correlation and regression analysis
Practical applications of regression analysis
Introduction to modeling simple regression and multiple (linear) regression
Measures of the accuracy of the estimated model
Analysis of the dynamics of phenomena
Increments and individual indexes
Aggregate price and quantity indices (Laspeyres, Paasche, Fisher)

	Time series				
	Time series of periods and moments				
	Time series components (trend, seasonal, cyclical and random fluctuations)				
	Trend extraction (mechanical and analytical method)				
	Simple moving average				
	Exponential smoothing				
	Modern methods of data visualization				
	Errors in test preparation				
	Errors in conducting the study Errors in the preparation of research results				
	Inference errors				
Droroguisitos					
and co-requisites					
Assessment methods	Subject passing criteria	Passing threshold	Percentage of the final grade		
	tutorial exam	60.0%	50.0%		
Recommended reading	Basic literature				
	Barrow, M. (2017), Statistics for Economics, Accounting and Busin				
		Studies, Harlow: Prentice Hall.			
		Newbold, P., Carlson, W.L., Thorne, B. (2019). Statistics for Business and Economics, New York: Pearson Education.			

	Supplementary literature			
		Anderson D. (2019), Essentials Of Statistics For Business & Economics, Cengage Learning Bąk I.,Markiewicz I., Mojsiewicz M., Wawrzyniak K. (2021), Formulas and tables Statistical and econometric methods, CeDeWu		
	eResources addresses	Adresy na platformie eNauczanie:		
Example issues/ example questions/ tasks being completed	What is a statistical feature? Provide	e types of features and examples.		
	The concept of general population and samples.			
	Calculation and interpretation of basic descriptive measures of distribution. Knowledge of basic distributions of a random variable.			
	Correlation coefficient (calculation m	fficient (calculation method, interpretation).		
	Assumptions of the Classical Linear Regression Model (KMRL).			
	Time series components, trend analysis, measurement of seasonal fluctuations.			
	Simple methods of examining the dynamics of economic phenomena, absolute growth, relative growth.			
Work placement	Not applicable			

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