



Subject card

Subject name and code	Descriptive Statistics, PG_00068404						
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		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 of lecturer (lecturers)	Subject supervisor						
	Teachers						
Lesson types and methods of instruction	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						
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_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		
	[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		

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

The main assumptions of KMNK

Assessment of the significance of parameters

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)

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

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

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