GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Descriptive Statistics, PG_00067353		
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	Full-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	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	5.0	35.0	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)

	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
Prerequisites and co-requisites	
Assessment methods and criteria	

Subject passing criteria	Passing threshold	Percentage of the final grade
tutorial exam II	60.0%	50.0%
written exam	60.0%	50.0%

Recommended reading	Basic literature	Barrow, M. (2017), Statistics for Economics, Accounting and Business 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 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 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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