GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	DESCRIPTIVE STATISTICS, PG_00071706		
Field of study	Management		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2026/2027
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	English
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 -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Agnieszka Wałachowska	
	Teachers		

Lesson types

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	3.0	37.0	100

Subject objectives

preparation of students to apply statistical methods and IT tools in the analysis of mass processes and to interpret the obtained results in the context of socio-economic and business problems.

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.	knows and understands statistical methods used to analyze mass processes and to formulate research problems and interpret results in socio-economic and business contexts	[SW1] Assessment of factual knowledge
[K6_U07] uses advanced information technologies to enhance data analysis and management processes.	is able to use statistical software to conduct data analysis, applying appropriate methods and formulating conclusions that support the decision-making proces	[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools
[K6_K03] is prepared to critically assess the knowledge they possess, which is necessary for solving cognitive and practical problems, and to supplement any gaps with opinions from external experts.	is ready to critically evaluate their knowledge of descriptive statistics and identify the limitations of applied method	[SK5] Assessment of ability to solve problems that arise in practice

Subject contents

Course content – lecture

1. Basic concepts of statistics: population, sample, and statistical variables
2. Types of statistical studies and sampling methods (random and non-random)
3. Classification of statistical characteristics and the concept of a random variable
4. Distributions of random variables as well as statistical series and histograms
5. Measures of central tendency (means, median, mode, quartiles, percentiles)
6. Measures of data variability (variance, standard deviation, range, and coefficients of variation)
7. Measures of asymmetry and kurtosis of a distribution and their interpretation
8. Visualization of statistical data (histogram, box-and-whisker plot, scatter plot)
9. Basics of statistical inference and the central limit theorem
10. Correlation analysis and relationships between variables
11. Analysis of relationships between qualitative characteristics (contingency tables, chi-square test, measures of association)
12. Introduction to regression analysis (simple and multiple regression)
13. Evaluation of statistical model quality and significance of parameters
14. Analysis of the dynamics of phenomena and time series
15. Errors in statistical research and modern methods of data visualization

Course content – laboratory

1. Basic concepts of statistics: population, sample, and statistical variables
2. Types of statistical studies and sampling methods (random and non-random)
3. Classification of statistical characteristics and the concept of a random variable
4. Distributions of random variables as well as statistical series and histograms
5. Measures of central tendency (means, median, mode, quartiles, percentiles)
6. Measures of data variability (variance, standard deviation, range, and coefficients of variation)
7. Measures of asymmetry and kurtosis of a distribution and their interpretation
8. Visualization of statistical data (histogram, box-and-whisker plot, scatter plot)
9. Basics of statistical inference and the central limit theorem
10. Correlation analysis and relationships between variables
11. Analysis of relationships between qualitative characteristics (contingency tables, chi-square test, measures of association)
12. Introduction to regression analysis (simple and multiple regression)
13. Evaluation of statistical model quality and significance of parameters
14. Analysis of the dynamics of phenomena and time series

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Problem-based test	60.0%	50.0%
Calculation tasks	60.0%	50.0%

Recommended reading

Basic literature

Ross, S. M. (2017). Introductory Statistics (4th ed.). Academic Press.

Freedman, D., Pisani, R., & Purves, R. (2007). Statistics (4th ed.). W. W. Norton & Company.

Shafer, D. S., & Zhang, Z. (2018). Introductory Statistics: A First Course (Version 2.0). FlatWorld.

Everitt, B. S., & Hothorn, T. (2010). A Handbook of Statistical Analyses Using R (2nd ed.). CRC Press.

Supplementary literature

Diez, D. M., Çetinkaya-Rundel, M., & Barr, C. D. (2019). *OpenIntro Statistics* (4th ed.). OpenIntro.

Moore, D. S., McCabe, G. P., & Craig, B. A. (2021). Introduction to the Practice of Statistics (10th ed.). Macmillan Learning.

eResources addresses

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.

Practical activites within the subject

Not applicable

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