GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Essentials of Statistics, PG_00049595		
Field of study	Management		
Date of commencement of studies	October 2022	Academic year of realisation of subject	2023/2024
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	English
Semester of study	3	ECTS credits	5.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Department of Economic Sciences -> Faculty of Management and Economics		
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. Stanisław Kot	
	Teachers	dr inż. Sabina Szymczak prof. dr hab. Stanisław Kot	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	30.0	0.0	0.0	45

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	45	10.0	70.0	125

Subject objectives

The skills of statistical analysis of business environment, resources and analysis of internal processes and use of information techniques for this purpose.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W09] knows the basic conditions concerning norms and standards covering particular areas of the organization's functioning, taking into account cultural norms	The student knows how to analyze the enterprise environment, use statistical analysis methods and statistical programs.	[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge
[K6_U07] observes the principles of business ethics to the managerial activities undertaken, and also uses appropriate regulations and legal rules and normative systems	The student uses correct methods in the analysis of statistical data.	[SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools
[K6_U03] points to the cultural differences that affect the functioning of organisations and their management methods in different parts of the world	The student correctly interprets the statistical data.	[SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools [SU2] Assessment of ability to analyse information

Subject contents	1. Elements of probability. The concept and the representation of the distribution characteristics of 2. Measures of statistical location: arithmetic mean, geometric mean, fashion, median, quartiles) 3. Measures of dispersion (variance, standard deviation, coefficient of variation, spacing kwartylowy) 4. Asymmetry and flattening distribution, measures of asymmetry (the third time relative kwartylowy skewness coefficient), a measure of flattening (relative fourth moment, kurtosis) 5. Analysis of two-dimensional random variables, analysis of interdependencies between quantitative traits (correlation, Pearson's correlation coefficient, linear regression: function parameters, measurements match) 6. Analysis of the correlation between quality characteristics (rank correlation coefficients, contingency coefficients) 7. Statistical indices (individual and aggregate indices price, volume and value Laspeyres, Paasche and Fisher indexes Single base and chain) 8. Elements of descriptive analysis of time series (function linear and non-linear trend, periodic fluctuations in relative and absolute, calculated over the average level of the phenomenon and the trend trend, random fluctuations) 9. The expected value, variance and standard deviation of a random variable displacement. 10. Selected distributions of discrete variables (zerojedynkowy distribution, binomial, Poisson) 11. Continuous random variable, the notion of probability density function 12. Normal distribution, standardization of normal random variable.
Prerequisites and co-requisites	the basis of mathematical analysis, the basis of probability

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Final exam (laboratory)	50.0%	50.0%
Final exam (lecture)	50.0%	50.0%

Recommended reading

Basic literature	1. Aczel A.D. (1989), Complete Business Statistics, Irwin. 2. Freund J.E., R.E. Walpole (1987), *Mathematical Statistics*, Prentice-Hall, (4th edition). 3. **Gudmund R., Iversen Mary G.(1997). S*tatistics. The Conceptual Approach.* Springer, New York, NY.** 4. Mendenhal W. l, D.D. Wackerly (2007), *Mathematical Statistics with Applications*, Thomson Learning (7th edition). 5. **Othmar W. Winkler, (2009). *Interpreting Economic and Social Data. A Foundation of Descriptive Statistics*. Springer, Berlin, Heidelberg** 6. **Wasserman, L. (2004). *All of Statistics, A Concise Course in Statistical Inference.* Springer, New York, NY.**
Supplementary literature	• Greń J. „Statystyka matematyczna-modele i zadania” PWN, Warszawa, 1999 lub wydania późniejsze. • Fisz M., „Rachunek prawdopodobieństwa i statystyka matematyczna, PWN, Warszawa 1969. • Kot S.M., Sokołowski A., Jakubowski J. „Statystyka”, Difin, Warszawa, 2007 • Krysicki W, J.Bartos, W.Dyczka, K.Królikowska, M.Wasilewski „Rachunek prawdopodobieństwa i statystyka matematyczna w zadaniach”, część II, PWN, Warszawa 1986
eResources addresses	Adresy na platformie eNauczanie: Essentials of statistics 2023/24 - Moodle ID: 34507 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=34507

Example issues/ example questions/ tasks being completed	Task. During the research on the test station determines the basic parameters of a random motor vehicle leaving the production line. Amount of fuel consumed on the basis of produced cars had a normal distribution with an average 6.5 litres/100 km and variance 2.4 litres squared/100 km squared. If the variance of consumed fuel of a random car is more than 2.7 litres squared/100 km squared this car is aimed to replace the motor. 1. Calculate what percentage of cars back to improve .... 2. Calculate the percentage of cars are within a span of plus / minus 75% of the standard deviation relative to the mean value .... Questions. 1. What is the distribution of characteristics? 2. What is the decomposition of a time series? Present and review the components of the time series. 3. Give the central limit theorem.
Work placement	Not applicable

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