

。 GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Essentials of Statistics, PG_00044222								
Field of study	Engineering 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			blended-learning			
Year of study	2		Language of instruction			Polish			
Semester of study	3		ECTS credits			5.0			
Learning profile	general academic profile		Assessment form			exam			
Conducting unit	Faculty of Management and Economics								
Name and surname	Subject supervisor prof. dr hab. Stanisław Kot								
of lecturer (lecturers)	Teachers		dr inż. Krzysztof Świetlik						
			prof. dr hab. Stanisław Kot						
Lesson types and methods	Lesson type	Lecture	Tutorial	Laboratory	Projec	:t	Seminar	SUM	
of instruction	Number of study hours	30.0	0.0	30.0	0.0	•	0.0	60	
	E-learning hours included: 30.0								
Learning activity and number of study hours	Learning activity	Participation in classes includ plan	n didactic ed in study	Participation in consultation hours		Self-study SUM		SUM	
	Number of study hours	60		8.0		57.0		125	
Subject objectives	Achieve 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_U09] obtains data for analysis and interpretation of results using information technology		Student verifies the research hypotheses on the functioning of the company and the effects of the operation on the basis of chosen statistical methods			[SU2] Assessment of ability to analyse information			
	[K6_W11] has the basic knowledge of mathematics, physics and chemistry necessary to solve technical problems		Student understands the probabilistic context of distributions in a sample. He can apply the theoretical characteristics of this distribution fo describing nonparametric and parametric propersties of a sample.			[SW1] Assessment of factual knowledge			
	[K6_W06] has a basic knowledge of methods and tools for conducting research and analyses related to particular areas of the enterprise's operations and its environment		student knows the methods of statistical surveys in the enterprise and its environment			[SW1] Assessment of factual knowledge			
	[K6_W05] knows the statistical and IT methods and tools that enable the acquisition and presentation of data on the organisation's resources, including technical resources		The student recognizes the importance and relevance of the information from the company and their analysis using appropriate statistical methods to make the right decisions in the management of the company			[SW1] Assessment of factual knowledge			

Subject contents	PART 1 - ANALYSIS OF THE STRUCTURE					
	 1 Basic concepts, statistical survey - stages, graphical and tabular presentation of distribution - types of tables and statistical graphs, examples. 2 The empirical distribution. Structural and distributive series , determination of the number of classes. 3 Measures of position - classical and positional. Mean, dominant, median, quantiles . Methods of counting, examples. 4 Measures of variation (dispersion) - classical and positional. The variance, standard deviation, coefficient of variation, the range, the quartered eviation. Methods of counting , examples. 5 Measures of asymmetry and concentration. Types of distributions, the Lorenz curve, the Gini coefficient. Methods of counting, examples. Comparing distributions - a relative indicator of the similarity of the structures. PART 2 - ANALYSIS OF CORRELATION AND REGRESSION 1 Correlation analysis for quantitative characteristics. The concept of correlation , statistical presentation of correlation neasures of correlation , Pearson's correlation coefficient. 2 Introduction to statistical inference (types of hypotheses, the level of significance, the probability test). Correlation analysis for qualitative characteristics. Conformance Test Pearson , Yates correction, coefficients of correlation convergence - T Czuprowa , Cramer's V , C Pearson . 3 Partai and multiple correlation. Coefficients of rank correlation of the strength and direction of impact variables. 5 Multiple and non-linear regression function - power function , exponential , hyperbolic, polynomials , interpretations . PART 3 - ANALYSIS OF THE DYNAMICS 1 Time series . Indexes dynamics - Chain and Single base , transformations , the average rate of change , interpretation , methods of counting , examples. 2 The use of indices - decomposition of the time series, analysis of seasonal fluctuations , linear and nonlinear models - decomposition of the time series. analysis of seasonal fluctuations					
Prerequisites and co-requisites	the basis of mathematical analysis, t	the basis of probability				
Assessment methods	Subject passing criteria	Passing threshold	Percentage of the final grade			
and criteria	Laboratory test		30.0%			
	Final test during exercises	60.0%	30.0%			
		60.0%	40.0%			
		1) lótwick I. Dodgórski, I. Statisti				
Recommended reading	Basic literature	 Jozwiak J., Podgorski, J., Statisti Warsaw, Makać W. Urbanek-Krzysztofiak description, University of Gdansk, G 	, Statistics from the ground up, PWE, sztofiak D.: Methods of statistical dansk, Gdansk			
	Supplementary literature	1) Amir D.Aczel: "Statistics for Management", Oxford University Press,				
	eResources addresses	Adresv na platformie eNauczanie:				
		Podstawy Statystyki Z 2023/2024 - Moodle ID: 34153 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=34153 Podstawy Statystyki laboratorium WZiE Zarz. Inż, stacjonarne, sem. zimowy 2023/24 - Moodle ID: 34914 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=34914				
Example issues/ example questions/ tasks being completed	 In two Gdansk hospitals that can accommodate the same number of patients in the surgery ward, falls a different number of patients on one bed (average per week) and there is, respectively, 7 and 5. Determine the average number of patients falling on the bed in these hospitals. On the basis of the following data, examine the correlation between the time used for learning and assessment in statistics. 					
	Pearson correlation coefficient indicates the correlation The theoretical model of linear regression shows that Tthe observed variation in the monthly charges for electricity differs from estimated ones on the average of, which is% of the average level of charges. variability of the cost of electricity has been not explained by the size of the family.					
Work placement	Not applicable					

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