

## 。 GDAŃSK UNIVERSITY OF TECHNOLOGY

## Subject card

Subject name and code	Statistical analysis in production management, PG_00064718							
Field of study	Management and Production Engineering							
Date of commencement of studies	February 2025		Academic year of realisation of subject		2024/2025			
ducation level second-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	1		ECTS credits		3.0			
Learning profile	general academic profile		Assessment form		assessment			
Conducting unit	Faculty of Mechanical Engineering and Ship Technology							
Name and surname	Subject supervisor		dr hab. inż. Dariusz Fydrych					
of lecturer (lecturers)	Teachers							
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project		Seminar	SUM
	Number of study hours	15.0	0.0	15.0	15.0		0.0	45
	E-learning hours inclu	ided: 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		7.0		23.0		75
Subject objectives	The aim of the course	e is to familiariz	e students with	n statistical tech	nniques	used in	production n	nanagement.

Learning outcomes	Course outcome	Subject outcome	Method of verification				
[K7_U13] evaluates the feasibility and potential for utilizing new technical and technological achievements in accomplishing tasks characteristic for the field of study		Student classifies production processes	[SU1] Assessment of task fulfilment				
	[K7_U04] creatively designs or modifies, in whole or at least in part, production and technological systems and processes, in accordance with the given specifications, taking into account technical and non-technical aspects, estimating costs and using known design techniques appropriate for tasks in the field of Management and Production Engineering	The student is able to acquire and use multidisciplinary knowledge.	[SU1] Assessment of task fulfilment				
	[K7_W02] demonstrates structured and theoretically based knowledge covering key issues in the field of Management and Production Engineering allowing for modeling and analysis of stationary and non-stationary production processes and systems, devices and technological processes with continuous and discrete operation	The student is able to use statistical techniques	[SW1] Assessment of factual knowledge				
[K7_K11] is aware of import of professional acting, the critical verification of acquir knowledge and consulting opinion in case of facing difficulties with individual p solving		The student is active in acquiring knowledge	[SK2] Assessment of progress of work				
Subject contents	Lecture:Basic concepts of statistics. Statistical model. Data mining. Taxonomy.Statistical analysis as a production optimization tool. The role of statistical methods in production engineering.Statistical software: Statistica, R, SPSS, Statgraphics, MS Excel. Principles of data preparation for statistical analyses.Basic statistics: measures of position and spread.Regression analysis: simple regression, multiple regression, factorial regression, polynomial regression, response surface regression.Logistic regression.Dimension reduction methods. Correspondence analysis. Factor analysis. Principal component analysis.Cluster analysis. Classification trees.Industrial statistics: experiment planning.Graphical methods of presenting multidimensional data: star plots, Chernoff faces, matrix plots, frame-whisker plots.Case study: machining, welding, other manufacturing processes						
	Project:Development of a solution to a given multidimensional problem in the field of basic manufacturing techniques.Laboratory:Getting acquainted with the use of statistical programs (e.g. Statistica). Preparation of data for analysis.Task solution:Verification of the fit of the data to the normal distribution: the Shapiro-Wilk testSimple regressionMultiple regressionCluster analysisCorrespondence analysisLinear ordering						
Prerequisites and co-requisites							
Assessment methods	Subject passing criteria	Passing threshold	Percentage of the final grade				
and criteria	Project	60.0%	20.0%				
	Laboratory	60.0%	20.0%				
	Test	60.0%	60.0%				
Recommended reading	Basic literature Stanisz, A. (2006). Przystępny kurs statystyki z zastosowanie STATISTICA PL. Wyd. StatSoft, Kraków.   Dobosz, M. (2004). Wspomagana komputerowo statystyczna wyników badań. Akademicka Oficyna Wydawnicza EXIT.		statystyki z zastosowaniem aków. omputerowo statystyczna analiza na Wydawnicza EXIT.				
	Supplementary literature Kot, S., Jakubowski, J., & Sokołowski, A. (2007). <i>Statystyka:</i> podręcznik dla studiów ekonomicznych. Centrum Doradztwa i Informacji Difin.						
	eResources addresses Adresy na platformie eNauczanie:						

Example issues/ example questions/ tasks being completed	Calculate the indicated measures of position and dispersion for the given dataset.
	Discuss the principles of experiment planning.
	Describe the idea of dimension reduction methods.
Work placement	Not applicable

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