GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	SAS statistics , PG_00027638						
Field of study	Mathematics						
Date of commencement of studies	October 2023		Academic year of realisation of subject		2025/2026		
Education level	first-cycle studies		Subject group		Optional subject group 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	3		Language of instruction		Polish		
Semester of study	6		ECTS credits		4.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Nonlinear Analysis and Statistics -> Faculty of Applied Physics and Mathematics						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Karol Dziedziul					
	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: 2.0						
	Adresy na platformie eNauczanie:						

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	The aim of the subject is to teach students the chosen methods and tools which the mathematical statistics offers and providing them with examples of various real life applications. Students will also learn how to use SAS package to carry out all the necessary calculations.

Learning outcomes	Course outcome	Subject outcome	Method of verification
	K6_U12	student is able to solve hypothesis testing issues: for expected value, standard deviation, ANOVA	[SU1] Assessment of task fulfilment
	K6_W09	Students can use the SAS package to data processing using GLM, decision trees	[SW1] Assessment of factual knowledge
	K6_U07	Students only work on real data. Their task is to choose the best model	[SU1] Assessment of task fulfilment

Subject contents	1. Basic distributions Chi-square distribution, t-Student distribution, F-Snedecor distribution 2. Tests of hypotheses, t ANOVA two factors Type I and type II errors 3. Theorem Neymana Pearsona 4. Comparing GLM, decision trees, neural networks 5. Classification and Regression Trees, proc hpsplit 6. False dicovery rate, Theorem. Benjamini Hochberga

Prerequisites and co-requisites	1. Probability theory 2. Programming in SAS

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Points achieved on lectures 50%. + points on lab 50%	60.0%	100.0%

Recommended reading	Basic literature	1. J. Bartos, W. Dyczka, W. Krysickit Rachunek Prawdopodobieństwa i Statystyka Matematyczna w Zadaniach część 2 Wydawnictwo Naukowe PWN
		2. Robert S. Witte, John S. Witte. Statistics, Hoboken, NJ : John Wiley \& Sons Inc., 2017.Wydanie 11
		3. L. Breiman, J. Friedman, R. Olshen, and C. Stone. Classification and Regression Trees Chapman \& Hall/CRC, [post 2005].
		4. Bradley Efron, Trevor Hastie. Computer Age Sta-tistical Inference Algorithms, Evidence, and Data Science Cambridge University Press 2016
		5. De Jong, P., & Heller, G. (2008). Generalized Linear Models for Insurance Data (International Series on Actuarial Science). Cambridge: Cambridge University Press.
	Supplementary literature	J. Bartoszewicz, Wykłady ze statystyki matematycznej, PWN, Warszawa 1996.
	eResources addresses	
Example issues/ example questions/ tasks being completed	1. Tests for the equality of two means and two variances, ANOVA. Understanding the results obtained by SAS modeling with GLM	
Work placement	Not applicable	