GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Inference in Multivariete Statistics, PG_00044136
Field of study	Mathematics

Date of commencement of studies	October 2024	Academic year of realisation of subject	2024/2025
Education level	second-cycle studies	Subject group	
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish
Semester of study	2	ECTS credits	5.0
Learning profile	general academic profile	Assessment form	exam

Conducting unit	Faculty of Applied Physics and Mathematics

Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Anna Szafrańska
	Teachers	dr inż. Anna Szafrańska

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	15.0	0.0	15.0	60

E-learning hours included: 0.0

Additional information:
E-Learning course (lecture, laboratory, seminar):
https://enauczanie.pg.edu.pl/moodle/course/view.php?id=37001

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	60.0	125

Subject objectives	Classical statistical introduction to data science. Computer laboratory oriented on practicable R packages tools.

Learning outcomes	Course outcome	Subject outcome	Method of verification

Subject contents	Elements of R. Styles, patterns and structures of data science. Functional analysis notations in data science. Statistical models. Introductory inference theory. Regression. Clustering methods. Introduction to classification and algorithms in data science. Classification methods. Multidimensional data problems. Elements of principal components. K-means agorithm.
Prerequisites and co-requisites	Courses completed: Probability Theory, Mathematical Statistics.

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Project 1	50.0%	15.0%
	Seminar	0.0%	10.0%
	Oral	50.0%	30.0%
	Project 2	50.0%	15.0%
	Test	50.0%	30.0%

Recommended reading	Basic literature	J.Kogan, Introduction to Clustering Large and High-Dimensional Data, Cambridge University Press, 2007.
		T.Panek, J.Zwierzchowski, Statystyczne metody wielowymiarowej analizy porównawczej, Oficyna Wydawnicza SGH, 2013.
		I.Koch, Analysis of Multivariate and High Dimensional Data, Cambridge University Press, 2014.
		R.Johnson, D.Wichern, Applied Multivariate Statistical Analysis, Pearson, 2014.

	Supplementary literature	W.K.Hardle, L.Simar, Applied Multivariate Statistical Analysis, Springer, 2015.
		C.Chatfield, A.J.Collins, Introduction to Multivariate Analysis, CRC, 2017.
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	Given a joint multidimensional distribution find its marginal and conditional distributions. Find principal components of a covariance matrix. Using the k-means method, cluster the given data set.	
Work placement	Not applicable	

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