

。 GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	BigData and data exploration, PG_00062739								
Field of study	Technologies for Industry 5.0								
Date of commencement of studies	October 2024		Academic year of realisation of subject		2025/2026				
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		Polish				
Semester of study	4		ECTS credits		4.0				
Learning profile	general academic profile		Assessment form		assessment				
Conducting unit	Katedra Inżynierii Materiałów Funkcjonalnych WETI -> Faculty of Electronics, Telecommunications and Informatics								
Name and surname	Subject supervisor	ıbject supervisor		dr inż. Milena Marycz					
of lecturer (lecturers)	Teachers								
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Projec	t	Seminar	SUM	
	Number of study hours	15.0	0.0	30.0	0.0		0.0	45	
	E-learning hours inclu	ided: 0.0							
Learning activity and number of study hours	Learning activity	Participation i classes includ plan	n didactic led in study	didactic Participation in d in study consultation hours		Self-st	udy	SUM	
	Number of study hours	45		5.0		50.0		100	
Subject objectives	Presentation of the essence of data exploration and its applications. Discussion of basic data mining techniques. Demonstration of selected data mining algorithms and their application in specific examples.								
Learning outcomes	Course outcome		Subject outcome			Method of verification			
	[K6_U05] interprets phenomena occurring around the technological process and processes occurring in the life cycle of devices and systems, makes a critical assessment of the functioning of existing solutions		As a result of the learning process, the student acquires the ability to use selected data mining tools and to interpret the results obtained.			[SU5] Assessment of ability to present the results of task [SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment			
	[K6_W06] demonstrates knowledge related to data analysis and engineering, machine learning, knows the principles of integrating data with management systems to analyze complex engineering and technological problems		As a result of the learning process, the student acquires knowledge in the field of modern data mining methods and mathematical models related to data mining. The student is able to characterize techniques, methods, and tools for advanced data analysis.			[SW1] Assessment of factual knowledge			

Subject contents 1. Introduction to Big Data and large-scale data processing technologies.							
	2. Data storage and management.						
	3. Introduction to data mining.						
	4. Data cleaning and preprocessing.						
	5. Issues related to real-world data analysis.						
	6. Data clustering and classification.						
	7. Classification methods (Naive Bayes, decision trees).						
	8. Selected clustering methods.						
	9. Time series forecasting.						
	10. Recommender systems.						
	11. Data mining in Python.						
	12. Decision support systems.						
	13. Ethics and privacy in data mining.						
	14. Big Data and data mining use cases.						
Prerequisites and co-requisites							
Assessment methods	Subject passing criteria	Passing threshold	Percentage of the final grade				
and criteria		60.0%	50.0%				
		60.0%	50.0%				
Recommended reading	Basic literature	Larose, Daniel T., Data Mining: A Practical Guide to Knowledge Discovery, Wydawnictwo Naukowe PWN, Warsaw, 2007.					
		Morzy, Tadeusz, Data Exploration, PWN, Warsaw, 2013.					
		Hand, D., Mannila, H., & Smyth, P.,	Data Mining, WNT, Warsaw, 2005.				

	Supplementary literature	Larose, Daniel T., Data Mining Methods and Models, Wydawnictwo Naukowe PWN, Warsaw, 2007. Witten, Ian H., Frank, Eibe, Hall, Mark A., Data Mining: Practical Machine Learning Tools and Techniques, Third Edition, Warsaw, 2024.
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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