



Subject card

Subject name and code	Advanced data mining, PG_00067415						
Field of study	Data Engineering, Data Engineering						
Date of commencement of studies	October 2026	Academic year of realisation of subject			2029/2030		
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			at the university		
Year of study	4	Language of instruction			English		
Semester of study	7	ECTS credits			3.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Software Engineering -> Faculty of Electronics Telecommunications and Informatics -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Aleksandra Karpus				
	Teachers		dr inż. Aleksandra Karpus				
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	30.0	0.0	0.0	30
	E-learning hours included: 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	30		3.0		42.0	75
Subject objectives	The aim of the course is to introduce students to the subject of exploration and visualization of data-sets using Python programming language.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_U04] formulates logical solutions to complex or unstructured problems		The student is able to select the appropriate machine learning method to solve data mining problems.		[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools		
	[K6_U06] acquires new knowledge, planning its own development in aiming at achieving defined goals		The student is able to draw knowledge from various sources, including knowledge from other fields of science, in order to solve complex problems of analyzing real data.		[SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject		
	[K6_K03] demonstrates the ability to think critically and analytically and integrates knowledge from many disciplines in order to make effective decisions		The student is able to draw meaningful conclusions from analyzed data. He is able to apply knowledge from various fields in order to enrich the analysis performed.		[SK5] Assessment of ability to solve problems that arise in practice		
Subject contents	Course content – laboratory 1. Introduction to Python 2. Data Preparation 3. Data Visualization 4. Basic Predictive Models 5. Decision Tree Model 6. Tuning of hyper-parameters 7. Anomaly Detection (K-means Clustering)						
Prerequisites and co-requisites	Basic knowledge of programming and statistics.						

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
		practical exercises	60.0%
Recommended reading	Basic literature	<ol style="list-style-type: none"> 1. Valentina Porcu, Python for Data Mining Quick Syntax Reference, Berkeley, CA : Apress : Imprint: Apress, 2018 2. Megan Squire, Mastering Data Mining with Python Find patterns hidden in your data, Packt Pub, 2016 3. Robert Layton, Learning data mining with Python: harness the power of Python to analyze data and create insightful predictive models, Packt Pub, 2015 	
	Supplementary literature	<p>Greeneltch Nathan, Python Data Mining Quick Start Guide, Packt Pub</p> <p>S.Ryza, U.Laserson, S.Owen & J.Wills, Advanced Analytics with Spark (Spark. Zaawansowana analiza danych), O'Rely (Helion)</p> <p>Karau, H., Konwinski, A., Wendell, P., Zaharia, M.: Learning Spark: Lightning-Fast Big Data Analysis. O'Reilly, 2015</p>	
	eResources addresses		
Example issues/ example questions/ tasks being completed	During the course, the student will select the optimal hyperparameters of the predictive model.		
Practical activities within the subject	Not applicable		

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