GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00052288		
Field of study	Mathematics		
Date of commencement of studies	October 2022	Academic year of realisation of subject	2022/2023
Education level	second-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	1	Language of instruction	Polish
Semester of study	1	ECTS credits	4.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Zakład Analizy Nieliniowej -> Instytut Matematyki Stosowanej -> Faculty of Applied Physics and Mathematics		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Marcin Styborski	
	Teachers		

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	45.0	0.0	0.0	60

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	60	5.0	35.0	100

Subject objectives

The aim of the course is to familiarize students with the methods used in the daily practice of the LPP Data Sience team and practical training.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K7_W11	The student performs tasks related to machine learning. The student is able to work with data warehouses.	[SW3] Assessment of knowledge contained in written work and projects
K7_U11	The student knows what machine learning is. He knows its types and the process of creating. The student works with data warehouses and uses them for mathematical modeling.	[SU5] Assessment of ability to present the results of task [SU4] Assessment of ability to use methods and tools
K7_K03	The student performs a specific project task in a group, which ends with its explanation and visualization. As a result, he learns teamwork, regularity and responsibility for the entrusted component task.	[SK2] Assessment of progress of work [SK1] Assessment of group work skills
K7_W08	The student uses SQL and Python in practice to solve specific problems in business	[SW3] Assessment of knowledge contained in written work and projects

<table>
<tr><td>Subject contents</td><td>
LPP business

• Business processes and supply chain
• Data Science in the organization
• Roles in the Data Science team

Business Intelligence and Cubes

• Data warehouses
• Data modeling
• OLAP and tabular cubes

SQL

• Introduction to SQL
• Tables, partitions, clustered and non-clustered indexes, or how the database holds the data
• Data reading and performance

Data Science in practice

• Machine learning in business
• Types of machine learning models and the development process
• Basic metrics used in machine learning models
• Interpreting the results of machine learning models

SCRUM

• Explanation of the Scrum framework
• Roles, artifacts, events
• Scrum Tale simulation game
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<tr><td>Prerequisites and co-requisites</td><td>Basic knowledge of Python and SQL. Basic knowledge of probability and statistics.</td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Project execution in classes (10 weeks * 5 points)</td><td>50.5%</td><td>50.0%</td></tr>
<tr><td>Project implementation (30 points)</td><td>50.5%</td><td>30.0%</td></tr>
<tr><td>Class attendance and active participation in lectures (5 weeks * 4 points)</td><td>50.5%</td><td>20.0%</td></tr>
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<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>1. The Elements of Statistical Learning: Data Mining, Inference, and Prediction, Second Edition (Springer Series in Statistics) 2nd Edition Trevor Hastie, Robert Tibshirani, Jerome Friedman
2. Probabilistic Machine Learning: An Introduction Kevin Patrick Murphy. MIT Press, 2021.
3. Python. Machine learning i deep learning. Biblioteki scikit-learn i TensorFlow 2. Wydanie III, Sebastian Raschka, Vahid Mirjalili, Helion 2021
4. Zapytania w SQL. Przyjazny przewodnik. Wydanie IV, John L. Viescas, Helion 2021</td></tr>
<tr><td>Supplementary literature</td><td>1. Python w analizie danych. Przetwarzanie danych za pomocą pakietów pandas i numpy oraz środowiska ipython. Wydanie II, Wes McKinney, Wydawnictwo Helion
2. Uczenie maszynowe z użyciem Scikit-Learn. Aurelion Geron, Wydawnictwo Helion
3. Hurtownie danych. Od przetwarzania analitycznego do raportowania. Wydanie II, Adam Pelikant, Helion 2021</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:
Laboratorium specjalistyczne - Moodle ID: 26917
https://enauczanie.pg.edu.pl/moodle/course/view.php?id=26917</td></tr>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td>Work in the design laboratory billed in weekly incremental cycles in accordance with the Scrum framework. Timely delivery of weekly gains from project implementation in accordance with the developed Road Map. Verification will take place during review at each classes. Finally, a team presentation of the results obtained.</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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