GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Information Technology, PG_00055196		
Field of study	Mechanical Engineering		
Date of commencement of studies	October 2023	Academic year of realisation of subject	2023/2024
Education level	first-cycle studies	Subject group	Obligatory subject group in the field of study
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	English
Semester of study	1	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Manufacturing and Production Engineering -> Faculty of Mechanical Engineering and Ship Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Maciej Majewski	
	Teachers	dr hab. inż. Maciej Majewski	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	0.0	0.0	30.0	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	6.0	39.0	75

Subject objectives

Familiarization with the development and capabilities of selected IT technologies and cloud software for basic data analytics and reporting tasks.

Acquiring basic knowledge in the field of integration, processing and analysis of data using selected modern tools and platforms, including in the cloud.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_U01	The student analyzes the obtained or provided data using appropriate software. Performs basic programming tasks for analytical tasks.	[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information
[K6_K01] is aware of the need for complementing the knowledge throughout the whole life, is able to select proper methods of teaching and learning, critically assesses the possessed knowledge; is aware of the importance of professional conduct and following the rules of professional ethics; is able to show resourcefulness and innovation in the realisation of professional projects	The student identifies elements of modern information technologies, analyzes the components of the information system: software, platforms, programming languages, libraries, types of data sources, data types, method resources. Draws attention to the continuous development in the field of information technologies, which requires constant supplementation of knowledge.	[SK2] Assessment of progress of work [SK4] Assessment of communication skills, including language correctness

Subject contents	Methods of data integration, preparation and analysis using selected modern tools and platforms, including in the cloud. Methods of developing analysis results and reports using selected modern tools and platforms. Use of CSV files - integration and analysis of two-dimensional data structures. Data modeling, data types in statistics and levels of measurement. Data science fundamentals and empirical research. Democratizing the use of data and data science in the enterprise. Examples of applications of data analysis and machine learning.
Prerequisites and co-requisites	Basics of computer science and programming, basics of using data files and applications of analytical methods.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Assessment of individual projects	60.0%	100.0%

Recommended reading

Basic literature	Dany Log, "Python for Data Analysis: A Complete Step By Step From Intermediate to Advanced Guide for Python Coding, NumPy, Pandas for Data Analysis", Independently Published 2022. Wes McKinney, "Python for Data Analysis 3e: Data Wrangling with pandas, NumPy, and Jupyter", O'Reilly Media 2022. Simon Asplen-Taylor, "Data and Analytics Strategy for Business: Unlock Data Assets and Increase Innovation with a Results", Kogan 2022. Nussbaumer Knaflic Cole, "Storytelling with Data", John Wiley & Sons 2020.
Supplementary literature	Richard Benjamins, "A Data-Driven Company", Almuzara 2022.
eResources addresses	Podstawowe https://www.python.org/doc/ - Official Python documentation. Uzupełniające Adresy na platformie eNauczanie: Information Technology, winter 23/24 (PG_00055196) - Moodle ID: 31451 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=31451

Example issues/ example questions/ tasks being completed	Application of methods for integration, preparation and analysis of data using selected modern tools and platforms, including in the cloud. Application of methods to develop analysis results and reports using selected modern tools and platforms, including for business. The use of CSV files in the tasks of integration and analysis of two-dimensional data structures. Examples of data modeling, determining data types in statistical tasks. Examples of democratizing the use of data and data science in companies and telling stories based on analyzed data. Examples of applications of predictive analytics and machine learning. Characteristics and applications of the selected technology stack: Colab, Python, Pandas, Matplotlib, Stats, NumPy, SciPy and others.

Work placement	Not applicable

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