



Subject card

Subject name and code	Data analysis and presentation, PG_00065612						
Field of study	Naval Architecture and Offshore Structures						
Date of commencement of studies	February 2026		Academic year of realisation of subject		2025/2026		
Education level	second-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	1		Language of instruction		English		
Semester of study	1		ECTS credits		4.0		
Learning profile	general academic profile		Assessment form		exam		
Conducting unit	Institute of Naval Architecture -> Faculty of Mechanical Engineering and Ship Technology -> Wydział Politechniki Gdańskiej						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Marcin Życzkowski				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	0.0	30.0	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		10.0		30.0	100
Subject objectives	The student will become familiar with IT tools that enable processing and visualizing data in a clear and appealing way for the audience.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_W04] demonstrates knowledge encompassing selected issues in the field of advanced knowledge, particularly in the scope of methods, techniques, tools, and algorithms specific to Naval Architecture and Ocean Engineering		The student utilizes specialized mathematical and statistical operations to identify a problem described using external data (files).		[SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects		
	[K7_W02] demonstrates structured and theory supported knowledge encompassing key issues in the field of Naval Architecture and Ocean Engineering, enabling modeling and analysis of shipborne and offshore systems, devices, and processes		The student knows and understands the basic concepts and syntax of the Python programming language, with a particular focus on its applications in engineering and data analysis. They understand the importance of proper data visualization for the effective presentation of technical and engineering analysis results.		[SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge		

Subject contents	Familiarization with the basics of the Python language: Functions (creation, usage), understanding operators (arithmetic, logical, relational), retrieving and formatting user input, string operations (slicing, splitting, joining, letter case, pattern matching, replacing patterns, removing spaces, newline and tabulation, special characters in text), creating conditions using conditional statements (if, else, elif), introduction to new data structures (lists, sets, tuples, dictionaries), understanding list, dictionary, and set comprehensions, how loops work (for, while), file handling (loading, reading), random events (random), and handling data transmission formats (TXT, CSV, JSON). The student will become familiar with the Pandas library, which facilitates exploring and analyzing data in tabular form. The student will learn to load and save data from various sources such as CSV files, Excel, SQL, JSON, and others, and save data back into these formats. The student will also be able to select and index data, performing operations such as filtering, sorting, grouping, merging, and more. The student will also get acquainted with the Numpy library and will use various statistical functions and mathematical operations. Additionally, the student will learn the Seaborn and Matplotlib libraries, creating various types of charts, including scatter plots, histograms, heatmaps, box plots, and others.		
Prerequisites and co-requisites	The student knows the basics of Python programming.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Lecture	50.0%	50.0%
	Project	50.0%	50.0%
Recommended reading	Basic literature	https://www.python.org/ https://pandas.pydata.org/ https://numpy.org/ https://seaborn.pydata.org/ https://matplotlib.org/	
	Supplementary literature	https://www.python.org/ https://pandas.pydata.org/ https://numpy.org/ https://seaborn.pydata.org/ https://matplotlib.org/	
	eResources addresses		
Example issues/ example questions/ tasks being completed	Determine the value of the result variable after using the defined function. Calculate the mean (median) for records that meet the specified criteria.		
Work placement	Not applicable		

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