GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Data analysis and presentation, PG_00062658
Field of study	Naval Architecture and Offshore Structures

Date of commencement of studies	February 2024	Academic year of realisation of subject	2023/2024
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	Part-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish
Semester of study	1	ECTS credits	6.0
Learning profile	general academic profile	Assessment form	exam

Conducting unit	Zakład Informatyki Technicznej -> Institute of Ocean Engineering and Ship Technology -> Faculty of Mechanical Engineering and Ship Technology

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	18.0	0.0	0.0	27.0	0.0	45
	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	45	9.0	96.0	150

Subject objectives	The student became familiar with IT tools that will allow him to visualize data in a clear and attractive way for the recipient.

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K7_U01] Develops innovative strategies to solve complex and dynamic problems by synthesizing information from various sources and utilizing analytical, simulation, and experimental methods, considering environmental variability	The student is able to use external sources and present, analyse and visualize the problem in an understandable, attractive and legible way.	[SU4] Assessment of ability to use methods and tools [SU2] Assessment of ability to analyse information [SU5] Assessment of ability to present the results of task
	[K7_U04] Prepares professional presentations of analysis outcomes persuasively, providing them with profound interpretations to clearly convey their significance	The student is able to present professional mathematical and statistical analyzes in an attractive and clear way using IT tools, including the Numpy, Pandas, Seaborn libraries in Python.	[SU5] Assessment of ability to present the results of task [SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools
	[K7_W04] Conducts thorough analysis of complex problems, based on credible data and appropriately chosen methods, striving to achieve logical solutions	The student uses specialized mathematical and statistical operations so that the problem described by external data (files) can be recognized.	[SW3] Assessment of knowledge contained in written work and projects [SW2] Assessment of knowledge contained in presentation

Subject contents	Getting to know the basics of the python language:
	functions (creation, use), familiarization with operators (arithmetic, logical, relational), Retrieving and formatting data entered by the user, operations on strings (cutting strings, separating strings, combining strings, case of letters, finding patterns in text, pattern replacement , removing spaces, new line and tab, special characters in the text), how to create conditions using conditional statements (if, else, elif), learning about new data structures (lists, sets, tuples, dictionaries), learning about expressions generating (lists, dictionaries, sets), how loops work (for, while), file handling (loading, reading), random events (random), how to handle the data sending format (TXT, CSV, JSON)
	The student will become familiar with the Pandas, Seaborn, Numpy, and Matplotlib libraries.
	Pandas is a library that makes it easy to load, transform, explore, and analyze tabular data such as spreadsheets or databases.
	The student will learn the basic structures from this library: Series, DataFrame.
	The student will be able to load and save data from various sources, such as CSV files, Excel, SQL, JSON and many others. You can also save data to these formats. He will be able to select and index data. It will perform operations on the data such as filtering, sorting, grouping, combining and many others.
	The student will also learn the Seaborn and Matplotlib libraries and will make various types of plots, including scatter plots, histograms, heat maps, boxplots and others.
	The student will also learn about the Numpy library.
	It will also use various types of statistical functions and mathematical operations.

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
		50.0%	20.0%
		50.0%	80.0%

Recommended reading	Basic literature	https://pandas.pydata.org/
		https://seaborn.pydata.org/
		https://numpy.org/
		https://matplotlib.org/
	Supplementary literature	https://pandas.pydata.org/
		https://seaborn.pydata.org/
		https://numpy.org/
		https://matplotlib.org/
	eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed	What is DataFrame in Pandas library. Can Series data be converted to a list data structure?

Work placement	Not applicable