GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Object Programming and Data Analitics, PG_00060643		
Field of study	Transport and Logistics		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2025/2026
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	2	Language of instruction	Polish
Semester of study	3	ECTS credits	4.0
Learning profile	general academic profile	Assessment form	assessment
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	15.0	30.0	0.0	0.0	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	8.0	47.0	100

Subject objectives

Application of the programming language (PYTHON) to solve transport problems using real data such as: AIS, GPS, VTS, Bitmap. On the basis of the obtained data, the student analyzes the data. It prepares the obtained data for the implementation of a specific task. During the task, the student uses the previously learned Python libraries: Pandas, NumPy, Matplotlib.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U01] can obtain information from literature, databases and other sources; verify and systematize the information obtained, interpret it and draw conclusions, formulate and justify opinions	The student is able to independently develop a final report for the completed project in the PYTHON environment	[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task
[K6_W04] has well established knowledge in the field of computer science, electronics, automation and control, information technology and computer graphics, useful for understanding the possibilities of applying them in transport	Learning to conduct basic analyzes using models created in PYTHON. Acquisition of algorithm design skills	[SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects

Subject contents

The student has a task (project) to complete. The teacher provides data on the movement of the sea vessel. The student's task is to visualize the route of the sea vessel on the map (Basemap). Perform ship motion analysis. Prepare a report in the form of a txt file, which will contain information every 30 minutes about its position, speed, course. In addition, the report should contain information about the type of ship (basic data), average speed, minimum and maximum speed.

Prerequisites and co-requisites

the basics of the Python language

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Project	50.0%	100.0%

Recommended reading	Basic literature	https://docs.python.org/pl/3/tutorial/index.html https://helcom.fi/baltic-sea-trends/data-maps/ http://data.bshc.pro/#2/53.8/12.5
	Supplementary literature	https://www.udemy.com/topic/python/
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	Ship movement data transformation, AIS data, GPS data Transformation and visualization of bathymetric data. Statistical analysis tasks: mean, variance, etc.	
Work placement	Not applicable	