GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Integrated Information Technology Systems, PG_00060659		
Field of study	Zintegrowane systemy informatyczne		
Date of commencement of studies	October 2023	Academic year of realisation of subject	2025/2026
Education level	first-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	3	Language of instruction	Polish
Semester of study	5	ECTS credits	5.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Division of Applied Computer Science -> Institute of Naval Architecture -> Faculty of Mechanical Engineering and Ship Technology -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Paweł Chodnicki	
	Teachers	dr inż. Paweł Chodnicki	

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	30.0	0.0	0.0	0.0	60

E-learning hours included: 0.0

eNauczanie source addresses:

Moodle ID: 1244 Zintegrowane systemy informatyczne
https://enauczanie.pg.edu.pl/2025/course/view.php?id=1244

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	60.0	125

Subject objectives

The course aims to familiarize students with the functioning of integrated IT systems in logistics and transport, with an emphasis on the use of artificial intelligence tools and the Python language for data analysis, optimization and prediction of logistics processes.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[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	The student has structured knowledge of the applications of computer science, electronics, automation, information technologies and computer graphics in the design and operation of integrated IT systems supporting transport and logistics processes.	[SW2] Ocena wiedzy zawartej w prezentacji
[K6_U06] can use appropriate methods and tools in accordance with the formulated specification; can perform a simple engineering task in the field of design, manufacture and operation of transport means and systems	The student is able to perform a simple engineering task in accordance with the formulated specification in the field of designing or implementing components of integrated IT systems supporting transport and logistics processes, using analytical tools and the Python language	[SU1] Ocena realizacji zadania [SU2] Ocena umiejętności analizy informacji [SU4] Ocena umiejętności korzystania z metod i narzędzi

Subject contents

Integrated IT systems in logistics introduction Introduction to data mining Types of data and their preparation for analysis Data mining methods: classification, grouping, anomaly detection Simple predictive models in logistics Data visualization and reporting in logistics AI and data mining applications in modern logistics Data security and responsibility for AI decisions Ethics, law, risks related to data analysis

Prerequisites and co-requisites	Basic knowledge of computer science and computer operation. Ability to work with spreadsheets (e.g. Excel, Google Sheets). Basic knowledge of logistics and transport (e.g. document flow, supply chain). Basic programming skills or at least knowledge of code structure (knowledge of Python or willingness to learn is recommended). Additional requirements (recommended): Completion of subjects: Computer science, Basics of logistics management in transport, Databases in TSL management (Transport, Forwarding, Logistics) Readiness to work with numerical data and analytical thinking. Interest in modern information technologies used in industry and logistics

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
	60.0%	80.0%
	60.0%	20.0%

Recommended reading

Basic literature	Data Mining Methods & ModelsAutor Daniel T. Larose WydawcaWiley-Interscience, 2006 ISBN8126507764, **Piotr Adamczewski** *Zintegrowane systemy informatyczne w praktyce* Wydawnictwo Mikom, Warszawa 2003 ISBN: 83-7279-308-5 **Wes McKinney** *Python dla analizy danych: obróbka danych za pomocą Pandas, NumPy i IPython* Tłum. Konrad Matuk, Helion, Gliwice 2018 ISBN: 978-83-283-4081-7
Supplementary literature	pandas.pydata.org scikit-learn.org matplotlib.org
eResources addresses	

Example issues/ example questions/ tasks being completed	Importing logistics data (CSV) to Python (Pandas) Load transport order data and present basic statistics. Data cleaning and preparation Remove outliers and fill in missing data in the order set. Transport data visualization Create a bar chart showing the number of orders by delivery region. Order grouping and classification Assign orders to groups (urgent / standard) based on characteristics (e.g. lead time, weight, cost). Building a simple predictive model Create a linear regression model predicting delivery time based on distance and type of transport. Final project Examine logistics data, identify the problem (e.g. delays), perform analysis and propose a solution supporting the decision (e.g. new route recommendation, order classifier).
Practical activites within the subject	Not applicable

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