GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Intelligent logistics systems, PG_00062462		
Field of study	Transport		
Date of commencement of studies	February 2024	Academic year of realisation of subject	2024/2025
Education level	second-cycle studies	Subject group	Specialty 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	2	Language of instruction	Polish
Semester of study	3	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department Of Transportation Engineering -> Faculty Of Civil And Environmental Engineering -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Daniel Kaszubowski	
	Teachers	mgr inż. Konrad Biszko dr hab. Daniel Kaszubowski	

Lesson types and methods of instruction							
	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	15.0	0.0	45
	E-learning hours included: 0.0						
	Address on the e-learning platform: https://enauczanie.pg.edu.pl/moodle/index.php?id=7387						

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	5.0	25.0	75

Subject objectives	
	The main purpose of the course is introduction into practical aspects of implementation of modern solutions in logistics aimed at increased etfectiveness, reliability and operational flexibility. Problems of utilisation of interent of things in logisics are discussed, as well as challenges of increasing automation and robotisation of logistics operations. Main technology trends were highlighted, indicating how expected technology trends could shape requirements for practical skills within intellodent logistics systems implementation area. Laboratory classes cover the use of FlexSim software in applications related to modeling logistics systems, including autonomous warehouse vehicles and advanced logic for controlling model elements.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_U01] creates innovative solutions to complex and unstructured problems, taking into account the variability of the environment by synthesizing information from many sources, using analytical, simulation and experimental methods	Ability to analyze complex logistics processes for the purposes of their computer modeling.	[SU4] Assessment of ability to use methods and tools
[K7_K02] makes competent and ethical decisions, caring for the public interest and maintaining economic, social and environmental values	Ability to select appropriate KPIs to evaluate logistics processes	[SK5] Assessment of ability to solve problems that arise in practice
[K7_W02] explains the importance and interdependence of key components describing transport systems and processes and their environment, using in-depth knowledge in accordance with the main trends in the development of scientific disciplines related to the field of study	Ability to identify factors that determine the effectiveness of transport and logistics processes at the operational level	[SW3] Assessment of knowledge contained in written work and projects

Subject contents

1. Introduction to intelligent systems and aolutions
2. Factors supporting implementation of intelligent solutions
3. Logistics 4.0 and intelligent logistics chain
4. The meaning and functionality of an Internet of Things (IoT)
5. Examples of an IoT impelementation.
6. Determinants of work procesess automation
7. Intelligent industry and intelligent factory
8. Intelligent solutions in transportation, logistics and warehousing.
9. Modeling of logistics processes with FlexSim

Prerequisites and co-requisites

General knowledge of issues related to logistics management and solutions used in intelligent transport systems.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
single choice test	60.0%	60.0%
practical excercises	60.0%	40.0%

Recommended reading

Basic literature	Smart City. Informacja przestrzenna w zarządzaniu inteligentnym miastem. Wydawnictwo Naukowe PWN, Warszawa 2016r. red. Gotlib D., Olszewski R.
Supplementary literature	n/a
eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed

Modeling the use of AGVs in logistics processes

Basics of using network diagrams (ProcessFlow) in modeling

Work placement

Not applicable

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