



Subject card

Subject name and code	, PG_00073095						
Field of study	Transport						
Date of commencement of studies	February 2026		Academic year of realisation of subject		2026/2027		
Education level	second-cycle studies		Subject group				
Mode of study	Full-time studies		Mode of delivery		at the university		
Year of study	1		Language of instruction		Polish		
Semester of study	2		ECTS credits		3.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Transportation Engineering -> Faculty of Civil and Environmental Engineering -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Daniel Kaszubowski				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	15.0	0.0	15.0	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		0.0		0.0	45
Subject objectives	The aim of the course 'Logistics Systems Design' is to prepare students to design, model and optimise logistics systems using simulation methods and modern IT tools. The course combines automation, robotisation and Logistics 4.0 with the practical construction and verification of logistics process models. Students will learn to define design problems and assumptions, map resources, flows and control rules, and select performance indicators. Using FlexSim, they will create models of warehousing, internal transport and cargo-handling systems, including conveyors, operators and AGVs. 'What-if' analysis will enable them to identify bottlenecks, assess resource utilisation and compare organisational and technological solutions. The learning outcome will be the ability to work in teams to develop and justify logistics system designs based on simulation results and technical and economic criteria.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_U04] prepares and presents convincing, professional presentations of analysis results with their in-depth interpretation		The ability to develop models of logistics systems in the Flexsim application in 3D and using process-flow analysis		[SU4] Assessment of ability to use methods and tools		
	[K7_K01] recognizes the importance of knowledge related to the field of study in solving cognitive and practical problems		The ability to take a systematic approach to transport and logistics issues.		[SK5] Assessment of ability to solve problems that arise in practice		
	[K7_W03] demonstrates in-depth preparation in the application of analytical methods and techniques for formulating and solving problems		The ability to analyse the effectiveness of the developed model, to solve problems independently, and to identify opportunities for optimising the modelled system.		[SW3] Assessment of knowledge contained in written work and projects		

Subject contents	Course content – lecture		
	1. Definition of simulation and modelling 2. Characteristics of operating systems 3. Principles, examples and advantages of simulation 4. Users of simulation 5. Simulation procedure 6. Queueing system simulation 7. Discrete-event simulation		
	Course content – project		
	Basics of 3D Mode Logic of element flow Defining object parameters Using triggers Basics of Process Flow Using lists AGV control Healthcare module		
Prerequisites and co-requisites	A basic understanding of how logistics systems work.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	100	60.0%	100.0%
Recommended reading	Basic literature	1. A. M. Law, Simulation Modeling and Analysis. McGrawHil Education, 2015 2. K. A. Jurczyk, Flexsim. Podręcznik użytkownika. Intermarium, 2024 3. A. G. GreenWood, Simulation Primer, FlexSim, 2019 4. A. G. GreenWood, Simulation Software Primer, FlexSim, 2020	
	Supplementary literature		
	eResources addresses		
Example issues/ example questions/ tasks being completed	Modelling the use of AGVs in logistics processes The basics of using network diagrams in modelling		
Practical activities within the subject	Not applicable		

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