GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Design of Transport Systems, PG_00045257		
Field of study	Transport and Logistics, Transport and Logistics		
Date of commencement of studies	October 2020	Academic year of realisation of subject	2022/2023
Education level	first-cycle studies	Subject group	
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	3	Language of instruction	Polish
Semester of study	6	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Institute of Ocean Engineering and Ship Technology -> Faculty of Mechanical Engineering and Ship Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Kazimierz Czapczyk	
	Teachers	dr inż. Kazimierz Czapczyk	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	0.0	30.0	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	7.0	28.0	80

Subject objectives

The aim of the course is to provide students with information on transport systems, definitions and concepts. Students gain knowledge and skills in the operation of transport systems within various branches of transport, intermodal transport and learn the elements of modeling transport systems and processes.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W06] has an organized knowledge on engineering methods and design tools allowing the conducting of projects within the construction and operation of means and systems of transport	1. The student is able to make a critical analysis of the functioning of transport systems and other technical solutions and evaluate these solutions, including: can effectively participate in the technical inspection and assess the transport task from the point of view of non-functional requirements, has the ability to systematically carry out functional tests.	[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects
K6_U03	1. The student has an ordered, theoretically founded general knowledge in the field of technology, transport systems and various means of transport. 2. The student has ordered and theoretically rebuilt general knowledge in the field of key technical issues and detailed knowledge in the field of selected issues in this discipline of transport engineering.	[SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task

Subject contents	1. Basic concepts of the transport process, transport process and transport system. 2. Sources and features of transport needs, functions of transport in management. 3. Division of the transport system into subsystems and their classification, properties of subsystems, modeling of transport systems. 4. Transport systems: car, rail, inland water, transmission, sea and intermodal. 5. Criterion for selecting a means of transport. 6. The intensity and density of the traffic flow, criteria and limitations of the implementation of transport tasks, the cost related to the road elements of the transport system, models of the transport system development. 7. Impact of transport activity on the natural and human environment, external costs of transport.
Prerequisites and co-requisites	

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Knowledge of detailed issues in the field of transport systems of various modes of transport	55.0%	40.0%
Knowledge of issues in the field of transport systems	55.0%	60.0%

Recommended reading

Basic literature	1. Bąk Cz .: Transport systems. Introduction to transportation. Krakow University of Technology Publishing House, 1989. 2. Jacyna M .: Modeling and evaluation of transport systems. Publishing House of the Warsaw University of Technology, 2009. 3. Jacyna M .: Selected issues of transport systems modeling. Publishing House of the Warsaw University of Technology, 2009. 4. Leszczyński J .: Modeling of transport systems and processes. Publishing House of the Warsaw University of Technology, 1999.
Supplementary literature	1. Rydzkowski W., Wojewódzka-Król K. (ed.): Transport. PWN, Warsaw 2009. 2. Zeigler B.P., Modeling and simulation theory. PWN, Warsaw, 1984.
eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed	1. Space-time analysis of manipulation activities, shortest path determination and route optimization, issues related to transit points. 2. Calculations of the costs of the producer of the transport service from the sender to the recipient, taking into account reloading points (intermodal transport terminals, mass terminals and other reloading points appearing in the transport process). Transport and production issues, minimization of empty runs. 3. Minimization of transport costs in the logistics system. Consolidation of loads. 4. Designating service areas. Distribution of transport and production tasks between different points. 5. Application of modern databases in modeling and simulation of transport systems (NoSQL PRT etc.).
Work placement	Not applicable