GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Reliability in transportation, PG_00064271		
Field of study	Niezawodność w transporcie		
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 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 -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr Anita Milewska	
	Teachers	dr Anita Milewska	

Lesson types

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	5.0	25.0	75

Subject objectives

Learning the basic concepts of reliability of non-renewable objects, reliability structures, introduction to the reliability of renewable objects and the use of these issues in transport.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U01] able to use technical documentation and literature, databases and other sources of transport related information; able to interpret information, make logical links and formulate opinions and conclusions based on the above	The student is able to use various sources of information in the field of transport and formulate conclusions related to the reliability of objects and systems.	[SU4] Ocena umiejętności korzystania z metod i narzędzi [SU2] Ocena umiejętności analizy informacji [SU3] Ocena umiejętności wykorzystania wiedzy uzyskanej w ramach przedmiotu
[K6_W05] has knowledge in the field of traffic engineering, methods, algorithms, and technologies for traffic control, as well as safety and reliability in transportation	The student has basic knowledge of transport reliability, which also affects transport safety.	[SW1] Ocena wiedzy faktograficznej

Subject contents

Course content – lecture
Basic concepts related to the reliability of non-renewable objects, functional characteristics, empirical characteristics, numerical characteristics, basic reliability structures (series, parallel, mixed) and their reliability function, system readiness, introduction to the reliability of renewable objects, systems with reserve; use of the introduced issues in relation to transport.

Course content – exercises
Use the information presented in the lecture.

Prerequisites and co-requisites

Probabilistics, mathematical analysis, basics of transport systems.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Conjunction of conditions: pass the colloquium covering the scope of topics from lectures and tutorials, and get a positive grade of the current work on the tutorials.	55.0%	100.0%

Recommended reading	Basic literature	D. Bobrowski: Modele i metody matematyczne teorii niezawodności w przykładach i zadaniach. WNT Warszawa 1985. T. Szopa: Niezawodność i bezpieczeństwo. Ofic. Wyd. Politechniki Warszawskiej, Warszawa 2009.
	Supplementary literature	F. Grabski, J. Jaźwiński: Funkcje o losowych argumentach w zagadnieniach niezawodności, bezpieczeństwa i logistyki. WKŁ Warszawa 2009 W. Zamojski: Teoria i technika niezawodności. Wrocław 1976.
	eResources addresses	
Example issues/ example questions/ tasks being completed	Give an interpretation of the intensity of damage for a short time interval in relation to reliability. Discuss a system with a serial reliability structure.	
Practical activites within the subject	Not applicable	

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