



Subject card

Subject name and code	Mathematical statistics, PG_00064275						
Field of study	Transport						
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	4	ECTS credits			4.0		
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 inż. Kamila Szwaczekiewicz					
	Teachers	dr Anita Milewska dr inż. Kamila Szwaczekiewicz mgr inż. Anna Gobis					
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	15.0	15.0	0.0	0.0	60
	E-learning hours included: 0.0						
	eNauczanie source addresses: Moodle ID: 990 Statystyka matematyczna sem IV Transport https://enauczanie.pg.edu.pl/2025/course/view.php?id=990						
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		35.0		100
Subject objectives	The aim of the subject is to familiarize students with the methods of statistical data analysis such as estimation, hypothesis testing, Anova, regression and correlation.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_W01] has knowledge of mathematical analysis, algebra, calculus of probability and operational research required for describing and solving transport problems	The student has knowledge of statistical analysis such as Data Mining			[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects [SW2] Assessment of knowledge contained in presentation		
	[K6_U06] able to plan and conduct simple laboratory and operational experiments and simulations in the area of transport; able to interpret the results and formulate conclusions	The student is able to use statistical tools to describe problems arising in transport			[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools		

Subject contents	Course content – lecture Random measures. Random variables. Discrete and continuous (one- and multi-dimensional) distributions of random variables. Independence of random variables. Functions of random variables. Methods of mathematical statistics in estimation. Verification of statistical hypotheses, statistical tests. Regression and correlation.		
	Course content – exercises Random measures. Random variables. Discrete and continuous (one- and multi-dimensional) distributions of random variables. Independence of random variables. Functions of random variables. Methods of mathematical statistics in estimation. Verification of statistical hypotheses, statistical tests. Regression and correlation.		
	Course content – laboratory Random measures. Random variables. Discrete and continuous (one- and multi-dimensional) distributions of random variables. Independence of random variables. Functions of random variables. Methods of mathematical statistics in estimation. Verification of statistical hypotheses, statistical tests. Regression and correlation.		
Prerequisites and co-requisites	Subject knowledge: Mathematics		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Exercises - 2 tests during the semester	60.0%	30.0%
	Laboratory - checking the ability to use the software (passing test)	60.0%	30.0%
	Lecture - colloquium	60.0%	40.0%
Recommended reading	Basic literature	J. Greń, Statystyka matematyczna. Modele i zadania PWN Warszawa 1982. J. Jakubowski, R. Sztencel Wstęp do teorii prawdopodobieństwa, Script, Warszawa 2001.	
	Supplementary literature	G.M. Fichtenholz, Rachunek różniczkowy i całkowy, t. 1, 2 i 3 Wydawnictwo Naukowe PWN, Warszawa 2002 (t. 1 i 2), 2003 (t. 3). M. Fisz, Rachunek prawdopodobieństwa i statystyka matematyczna, PWN, Warszawa 1967.	
	eResources addresses		
Example issues/ example questions/ tasks being completed	1. Properties of the estimator; 2. Central Limit Theorem; 3. binomial distribution, Bernoulli scheme; 4. 3 sigma rule; 5. type I and II error; 6. A necessary condition to verify the hypothesis about the equality of two general means is ... 7. If we increase the sample size, how will the confidence interval for the mean change?		
Practical activities within the subject	Not applicable		

Document generated electronically. Does not require a seal or signature.