GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Linear algebra, PG_00021020					
Field of study	Mathematics					
Date of commencement of studies	October 2021		Academic year of realisation of subject		2021/2022	
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		blended-learning	
Year of study	1		Language of instruction		Polish	
Semester of study	1		ECTS credits		5.0	
Learning profile	general academic profile		Assessment form		assessment	
Conducting unit	Department of Nonlinear Analysis and Statistics -> Faculty of Applied Physics and Mathematics					
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Zdzisław Dzedzej				
	Teachers	dr inż. Anita Zgorzelska				
		dr hab. Zdzisław Dzedzej				

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	30.0	0.0	0.0	0.0	60
	E-learning hours included: 30.0						
	Adresy na platformie eNauczanie:						
	Algebra liniowa 1 1002/1 - Nowy - Nowy - Moodle ID: 17223 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=17223						

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	60.0	125

Subject objectives	Basic notions of linear algebra

Learning outcomes	Course outcome	Subject outcome	Method of verification
	K6_U08	complex numbers, determinants, matrices,	[SU4] Assessment of ability to use methods and tools
	K6_W07	linear properties in calculus and other parts of mathematics	[SW1] Assessment of factual knowledge
	K6_U03	proper use of algebraic objects	[SU3] Assessment of ability to use knowledge gained from the subject
	K6_U01	proving simple properties of matrices, linear independence of vectors,	[SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools
	K6_W04	formulates theorems and definitions	[SW1] Assessment of factual knowledge

Subject contents	linear equation systems- Gauss elimination, Cramer's method: matrices and their algebra; determinants - definitions , properties and applications; invertibility of matrices, matrix equations; rank of matrices; rational, real and complex numbers- geometric interpretation, powers, the field of complex numbers, Euler formulas; basic algebraic notions: groups, rings, fields, vector spaces. Linear dependence of vectors; Bases of and dimension of vector spaces. General theory of linear systems- Kronecker- Capelli theorem.

Prerequisites and co-requisites	

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	2 written tests	50.0%	80.0%
	homeworks and activity	10.0%	20.0%

Recommended reading	Basic literature	A. Romanowski, Linear Algebra, Wyd. PG 2003.
		T. Jurlewicz , Z. Skoczylas, Linear Algebra , GiS 2005
	Supplementary literature	J. Rutkowski,Linear Algebra liniowa in problems, PWN 2008
		G. Banaszak, W. Gajda, Elements of linear algebraj, WNT 2002.
	eResources addresses	Algebra liniowa 1 1002/1 - Nowy - Nowy - Moodle ID: 17223 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=17223
Example issues/ example questions/ tasks being completed	1. Draw the set $2 < |z + 1-2i| < 3$. 2. Solve the system $x -y + z = 1$ $2x - y = -1$ $-x + 3y - z = 1$ $-2y-z=-4$ 3.Define the dimension of a linear space.	
Work placement	Not applicable	