

Subject card

Subject name and code	Linear algebra, PG_00045352								
Field of study	Data Engineering								
Date of commencement of studies	October 2025		Academic year of realisation of subject			2025/2026			
Education level	first-cycle studies		Subject group			Obligatory subject group in the field of study			
Mode of study	Full-time studies		Mode of delivery			at the university			
Year of study	1		Language of instruction			Englis	English		
Semester of study	1		ECTS credits			3.0	3.0		
Learning profile	general academic profile		Assessment form			assessment			
Conducting unit	Faculty Of Electronics Telecommunications And Informatics -> Wydziały Politechniki Gdańskiej								
Name and surname	Subject supervisor		dr Ewa Kozłowska-Walania						
of lecturer (lecturers)	Teachers		dr Ewa Kozłowska-Walania						
Lesson types and methods	Lesson type	Lecture	Tutorial	Laboratory	Projec	:t	Seminar	SUM	
of instruction	Number of study hours	15.0	15.0	0.0	0.0		0.0	30	
	E-learning hours included: 0.0								
Learning activity and number of study hours	Learning activity	Participation in classes include plan			Self-study S		SUM		
	Number of study hours	30		5.0		40.0		75	
Subject objectives	Students obtain competence in using methods of linear algebra and knowledge how to solve simple problems that are found in the field of engineering, in particular connected to data engineering.								
Learning outcomes	Course out	come	Subject outcome			Method of verification			
	[K6_W02] demonstrates advanced preparation in methods and techniques for formulating and solving problems		Student knows the main theorems, methods and tools presented during the lecture and knows how top use them.			[SW1] Assessment of factual knowledge			
[K6_U04] formulates les solutions to complex of unstructured problems		or	methods presented during the class, the tools necessary for its correct solution.			[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 [SU5] Assessment of ability to present the results of task			

Binary operations. Basic algebraic structures: group, ring, filed, linear space. Elements of modular arithmetic, tables of addition and multiplication modulo n. Inverse modulo n. Field Zp. Field of complex numbers. Geometrical interpretation of complex numbers. Complex arithmetic. Complex roles. Simple equalitions in complex comain. Fing of polynomials over field K. Robs of polynomials. Fundamental theorem of algebra. Polynomial arithmetic with coefficients from field K=Zp. Synthetic division. Matrices and determinants. Inverse matrix. Matrix equations. Systems of linear equations. Cramers theorem. Gaussian elimination. Vectors in R3, dot, cross, and mixed products. Applications of vector products. Line and plane in 3D space vector, normal, parametric, canonical, intercept forms. Prerequisites Assessment methods and correquisites Assessment methods and criteria Subject passing oriteria Passing threshold Percentage of the final grade Final comprehensive test Go.0% 10.0% 10.0% Recommended reading Basic literature 1	Subject contents	1.						
Field of complex numbers. Geometrical interpretation of complex numbers. Complex arithmetic. Complex notes. Simple equations in complex domain.	Subject contents	Binary operations. Basic algebraic structures: group, ring, filed, linear space.						
Complex roots Simple equations in complex domain. Ring of polynomials over field K. Roots of polynomials. Fundamental theorem of algebra. Polynomial factorization. Polynomial arithmetic with coefficients from field K*Zp Synthetic division. Matrices and determinants. Inverse matrix. Matrix equations. Systems of linear equations. Cramers theorem. Gaussian elimination. Vectors in R3, dot, cross, and mixed products. Applications of vector products. Line and plane in 3D space vector, normal, parametric, canonical, intercept forms. Prerequisites Assessment methods and criteria Subject passing orderia Final comprehensive test Subject passing orderia Passing threshold Percentage of the final grade Final comprehensive test Subject passing orderia Passing threshold Percentage of the final grade Indian arity of Technology, Gardax. 2001. Elements of Linear Algebra, Publishing House of Gdansk University of Technology, Gardax. 2001. Elements of Linear Algebra, Moodle course (by M.Lapińska and M.Musieldy Gardax. 2001. Filements of Linear Algebra, Moodle course (by M.Lapińska and M.Musieldy Gardax. 2001. Filements of Linear Algebra, Moodle course (by M.Lapińska and M.Musieldy Gardax. 2001. Filements of Linear Algebra, Moodle course (by M.Lapińska and M.Musieldy Gardax. 2001. Filements of Linear Algebra, Moodle course (by M.Lapińska and M.Musieldy Gardax. 2001. Filements of Linear Algebra, Moodle course (by M.Lapińska and M.Musieldy Gardax. 2001. Filements of Linear Algebra, Moodle course (by M.Lapińska and M.Musieldy Gardax. 2001. Filements of Linear Algebra, Moodle course (by M.Lapińska and M.Musieldy Gardax. 2001. Filements of Linear Algebra, Moodle course (by M.Lapińska and M.Musieldy Gardax. 2001. Filements of Linear Algebra, Moodle course (by M.Lapińska and M.Musieldy Gardax. 2001. Filements of Linear Algebra, Moodle course (by M.Lapińska and M.Musieldy Gardax. 2001. Filements of Linear Algebra, Moodle course (by M.Lapińska and M.Musieldy Gardax. 2001. Filements of Linear Algebra, Moodle cours								
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