

Subject card

Subject name and code	Linear Algebra, PG_00186323						
Field of study	Informatics						
Date of commencement of studies	October 2026		Academic year of realisation of subject		2026/2027		
Education level	Bachelor's 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		Polish		
Semester of study	2		ECTS credits		5.0		
Learning profile	academic		Assessment form		exam		
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Magda Dettlaff				
	Teachers						
Lesson types	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: 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	60		0.0		65.0	125
Subject objectives	To familiarize the student with complex numbers, matrices, determinants, various methods of solving systems of equations and issues related to linear space and scalar products. Acquiring accounting skills and practice in using these issues.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[INFOL3_U02] is able to use his/her knowledge of higher mathematics to model and solve complex problems		The student is able to select appropriate linear algebra methods for a given optimization or decision-making problem. The student applies knowledge of systems of equations and matrices to construct mathematical models.		[SU4] test/exam - oral or written [SU5] implementation of a problem task		
	[INFOL3_W01] knows and understands advanced concepts of mathematical analysis and linear algebra with geometry and numerical methods		The student is familiar with the concepts and theorems in linear algebra covered in the lecture. The student is able to solve equations in the complex number set, perform operations on matrices, and solve systems of equations. The student knows and understands issues related to the linear vector space over a field.		[SW4] test/exam - oral or written [SW5] implementation of a problem task		
Subject contents	Complex numbers: canonical form and trigonometric form. Polynomials—real and complex; Bezout's theorem. Matrices—basic properties, operations on matrices, inverse matrices, eigenvalues of matrices. Determinants—methods for calculating determinants. Systems of linear equations—Gauss's elimination method, Cramer's rules. Linear space—definition of a space, subspaces, vectors, linearly independent and dependent sets of vectors, basis and dimension of a linear space, scalar product of vectors. Familiarizing students with the terminology in English.						
Prerequisites and co-requisites							

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	homeworks	51.0%	5.0%
	tests	51.0%	60.0%
	exam	51.0%	35.0%
Recommended reading	Basic literature	Jerzy Topp, Algebra liniowa, Wydawnictwo Uniwersytetu Gdańskiego, 2015, Gdańsk T. Jurlewicz, Z. Skoczylas, Algebra i geometria analityczna. Definicje, twierdzenia, wzory. Oficyna Wydawnicza GiS, Wrocław 2024. T. Jurlewicz, Z. Skoczylas, Algebra i geometria analityczna. Przykłady i zadania. Oficyn Wydawnicza GiS, Wrocław 2024.	
	Supplementary literature		
	eResources addresses		
Example issues/ example questions/ tasks being completed	Write the complex number $3+3i$ in trigonometric form, then calculate $(3+3i)^8$		
	Find the inverse matrix of a given matrix		
	State Bezout's theorem		
	Calculate the dot product of vectors.		
Work placement	Not applicable		

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