

**Subject card**

Subject name and code	Linear Algebra, PG_00204158						
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	practical	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	0.0	30.0	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	
	[[INFPL3_U01] can apply mathematical knowledge to formulate, analyse and solve tasks related to computer science, design and analyze algorithms in terms of their correctness and computational complexity		The student is able to use the knowledge acquired during classes to independently solve tasks from linear algebra. Is able to program basic algorithms from linear algebra, ex. calculating the determinant.			[SU4] test/exam - oral or written [SU5] implementation of a problem task	
	[[INFPL3_K02] is ready to recognize the importance of knowledge in solving cognitive problems and practical and seeking opinions experts in case of difficulties with independent problem solving		The student is able to precisely formulate questions that will help deepen their understanding of a given topic or identify missing elements in reasoning. Is ready to use professional literature and expert sources.			[SK1] oral statement/conversation/discussion	
	[[INFPL3_W01] knows and understands advanced mathematical concepts including the basics of algebra, discrete mathematics (elements of logic and set theory, combinatorics and graph theory), probabilistic methods and applies this knowledge to modeling IT problems, designing algorithms, analyzing data and solving computational problems		The student knows the concepts of linear algebra discussed during the lecture: complex numbers, matrices, determinants, linear spaces.			[SW4] test/exam - oral or written	

Subject contents	Complex numbers: canonical and trigonometric forms. Polynomials. Matrices - basic definitions and properties, inverse matrix. Determinants and methods of their calculation. Systems of linear equations - solving methods. Linear space - definitions, properties, vectors in linear space, linearly independent and dependent vectors, dimension and basis of space, dot product. To familiarize the student with the nomenclature in English.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	tests	51.0%	60.0%
	homeworks	51.0%	5.0%
	exam	51.0%	35.0%
Recommended reading	Basic literature	<p>Jerzy Topp, Algebra liniowa, Wydawnictwo Uniwersytetu Gdańskiego, 2015, Gdańsk</p> <p>T. Jurlewicz, Z. Skoczylas, Algebra i geometria analityczna. Definicje, twierdzenia, wzory. Oficyna Wydawnicza GiS, Wrocław 2016.</p> <p>T. Jurlewicz, Z. Skoczylas, Algebra i geometria analityczna. Przykłady i zadania. Oficyna Wydawnicza GiS, Wrocław 2015.</p>	
	Supplementary literature	A. Mostowski, M. Stark, Elementy algebry wyższej, PWN, Warszawa 1963	
	eResources addresses		
Example issues/ example questions/ tasks being completed	<p>Write the complex number <math>3+3i</math> in trigonometric form, then calculate <math>(3+3i)^8</math></p> <p>Find the inverse matrix of a given matrix</p> <p>State Bezout's theorem</p> <p>Calculate the dot product of vectors.</p>		
Work placement	Not applicable		

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