

Subject card

Subject name and code	Linear algebra, PG_00145070						
Field of study	Informatics						
Date of commencement of studies	October 2024	Academic year of realisation of subject			2024/2025		
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			6.0		
Learning profile	academic	Assessment form			exam		
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Magda Dettlaff				
	Teachers		mgr Maciej Stankiewicz dr inż. Magda Dettlaff dr Mikołaj Czechlewski				
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		90.0	150	
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		
	[INFL3_U02] can precisely formulate questions to deepen one's understanding of a given topic or find missing elements of reasoning		The student is able to use the knowledge acquired during classes to independently solve tasks.		[SU5] implementation of a problem task [SU8] observation of student's independent or team work		
	[INFL3_W01] has knowledge in mathematics including issues of mathematical analysis and linear algebra with geometry and numerical methods		The student knows the basic concepts of linear algebra discussed during the lecture.		[SW4] test/exam - oral or written		
	[INFL3_U01] can apply mathematical knowledge to formulate, analyze and solve problems related to computer science		The student knows the use of matrices and vectors for numerical calculations in computer science.		[SU4] test/exam - oral or written [SU8] observation of student's independent or team work		
Subject contents	Complex numbers: canonical and trigonometric forms. Polynomials - real and complex, Bezout's theorem. Matrices - basic properties, operations on matrices, matrix inverse. Determinants - methods of calculating determinants. Systems of linear equations - Gaussian elimination methods, Cramer's formulas. Linear space - definition of space, subspace, vectors, system of linearly independent and dependent vectors, basis and dimension of linear space, dot product, vector product and mixed product.						
Prerequisites and co-requisites							

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	homeworks	0.0%	0.0%
	egzam	50.0%	40.0%
	test 2	50.0%	30.0%
	test 1	50.0%	30.0%
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. Oficyn 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 $3+3i$ in trigonometric form, then calculate $(3+3i)^8$</p> <p>Find the inverse matrix of a given matrix</p> <p>State Bezout's theorem</p>		
Work placement	Not applicable		

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