University of Gdańsk

Subject card

Subject name and code	Linear algebra, PG_00143793		
Field of study	Informatics		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2024/2025
Education level	undergraduate studies	Subject group	Obligatory subject group in the field of study
Mode of study	part-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	
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	20.0	20.0	0.0	0.0	0.0	40

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	40	0.0	85.0	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
[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
[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.	[SU4] test/exam - oral or written [SU5] implementation of a problem task
[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

Subject contents

Complex numbers: canonical and trigonometric. Polynomials - real and complex, Bezout's theorem. Matrices - basic properties, operation on matrices, inverse matrix. 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 variable and dependent vectors, basis and dimension of linear space, scalar product, vector and mixed.

Prerequisites and co-requisites

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	test 2	50.0%	30.0%
	homeworks	0.0%	0.0%
	egzam	50.0%	40.0%
	test 1	50.0%	30.0%
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 2016. T. Jurlewicz, Z. Skoczylas, Algebra i geometria analityczna. Przykłady i zadania. Oficyn Wydawnicza GiS, Wrocław 2015.	
	Supplementary literature	A. Mostowski, M. Stark, Elementy algebry wyższej, PWN, Warszawa 1963	
	eResources addresses	Adresy na platformie eNauczanie:	
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		
Work placement	Not applicable		

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