Identification	Subject	MATH 231, Applied Linear Algebra	
	Department	Mathematics	
	Program Term	Undergraduate	
	Instructor	Fall, 2023 MatanatMursalova	
	E-mail:	matanat.mursalova@khazar.org	
	Phone:		
	Classroom/hours	Tuesday11.50, Tuesday13.40	
	Office hours		
Prerequisites	MATH 101		
Language Compulsory/Elective	English Compulsory		
Description		troduction to matrix theory and linear algebra and its	
Description		ifferent engineering fields, such as Matrices in	
	Engineering, Grap	ohs and Networks, Markov Matrices, Linear	
		ier Series, Matrices in Statistics and Probability and	
D	Computer Graphics.		
Required textbooks and course materials	Poole D. Linear al	r Algebra and its Applications. 4 th edition, 2012 gebra: a modern introduction. 4 th Edition, 2014.	
Course website	1 ooie, D., Emear ar	geora. a modern unroduction. 4 Lanton, 2014.	
Course outline	Linear Algebra is the study of vector spaces and linear transformations		
Course outline			
	on vector spaces. Linear Algebra is central to both pure and applied mathematics. Techniques from Linear Algebra are also used in		
	analytic geometry, engineering, physics, natural science, computer		
	science, and the social sciences. Topics include:		
	Systems of linear equations		
	Row reduction and echelon forms		
	Matrix operations, including inverses		
	Block matrices		
	Linear dependence and independence		
	Subspaces and bases and dimensions		
	Orthogonal	bases and orthogonal projections	
	Linear models and least-squares problems		
	Determinar	nts and their properties	
	• Cramer's R	Rule	
	• Eigenvalue	s and eigenvectors	
	Diagonalization of a matrix		
	Symmetric matrices		
	Positive de	finite matrices	

Course objectives	Upon successfully completing this course students will be able to: • Formulate and solve multi-variable systems of linear equations; • Matrices classification and computations; • Describing fundamental facts in vector spaces; • Calculation of eigenvectors and eigenvalues; • Implementing the mentioned concepts in engineering problems.				
Learning outcomes	At the end of the course the students should be able:				
	 To solve square systems by elimination 				
	 To complete solution of system of linear equation 				
	o To know pro	ocess of orthogonalization	1		
	 To calculate 	e of determinants			
	 To calculate 	e of eigenvalues and eigen	vectors		
		mmetric matrices and pos			
	matrices	1			
		ne basis and dimensions fo	or linear		
	transformations				
	o To know application of linear algebra to engineering				
Teaching methods	Lecture x				
	Experiential exercise Assisted work		Y		
	Assisted work x Assisted lab work x				
	Others	A			
Evaluation	Methods	Date/deadlines	Percentage (%)		
	Midterm Exam		30		
	Class Participation		5		
	Quizzes		20 (2 quizzes)		
	Activity		5		
	Project Final Exam		40		
	Total		100		
Policy	 NO CELL PHONES are allowed during lecture and lab sessions. PLEASE turn them off before lecture! (Not silent or vibrating mode). This is a university policy and violators will be reprimanded accordingly. No late assignments will be accepted without prior arrangement with the instructor for acceptable excuses. Medical and family emergency will be considered on case-by-case basis. No late homework will be accepted. Homework is to be completed on an individual basis. Students may discuss homework with classmates, but students are responsible for your own work. If students have consulted classmates, please note the individuals name on the top of students' assignment. Quizzes may be given unannounced throughout the term and will count as one homework. There will be no make-up quizzes. Students will be divided into groups of 3 individuals for study group sessions and will be assigned some problems to solve together in the class. 				

- No make-up exams. If students miss an exam, a zero score will be assigned to the missed exam.
- If students should miss class due to personal emergency or medical reasons, please notify the instructor by email immediately. A doctor's note will be required for make-up work.
- Students are responsible for completing the reading assigned from the textbook related to the covered topics and for checking email regularly for important information and announcements related to the course.
- University policy on academic honesty concerning exams and individual work will be strictly enforced.
- BE ON TIME!

Week (Tentative) Topics Textbook/Assignments 1 19.09.23 Systems of linear equations. 1.1, 2 26.09.23 Vector equations. 1.3, 3 03.10.23 Solution sets of linear systems. 1.5, 4 10.10.23 Linear independence. 1.7, 10.10.23 Linear independence. 1.7, 17.10.23 The matrix of a linear transformations. 1.9 5 17.10.23 The matrix of a linear transformations. 2.1 6 24.10.23 Matrix operations. 2.1 7 31.10.23 Partitioned matrices. 2.4, 2.5 8 07.11.23 Midterm Exam 2.8,2.9 9 14.11.22 Characterizations of invertible matrices Introduction to determinants. 3.1, 10 21.11.22 Cramer's rule, volume and liner transformations. 3.2 11 28.11.22 Null spaces, column spaces and liner transformations. 4.2 4.3 12 05.12.22 Coordinate systems 4.4 05.12.22 Coo	***	Date/Day	m .	Textbook/Assignments
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13 12.12.22 Change of bases . 4.7	13	12.12.22	Rank.	
		12.12.22	Change of bases .	4.7

1.4	22.12.22	Eigenvectors and eigenvalues.	5.1,
14	22.12.22	The characteristic equation.	5.2
1.5	29.19.22	Diagonalization.	5.3,
15	29.19.22	Eigenvectors and liner transformations.	5.4
	TBA	Final Exam	

This syllabus is a guide for the course and any modifications to it will be announced in advance.