Identification	Subject	MATH 217, Linear algebra and analytic geometry, 6 ECTS
	Department	Mathematics
	Program	Undergraduate
	Term	Fall, 2023
	Instructor	Huseynli Ali
	E-mail:	Ahuseynli@khazar.org
	Phone:	(+994) 50-667-46-86
	Classroom/hours	Monday: 11:50-13:20, Thursday: 11:50-13:20
Prerequisites	*Linear algebra and analytic geometry* is a second-year, first-semester course. The prerequisite is Calculus 2 course.	
Language	English	
Compulsory/Elective	Required	
Required textbooks and course materials	**Core Textbooks:** V.V. Konev. Linear Algebra, Vector Algebra and Analytical Geometry,Textbook. Tomsk: TPU Press, 2009, 114 pp.	
Course website		
Course outline	Linear algebra and analytic geometry is a major course at School of Science and Engineering of Khazar University; it plays a role in the understanding of science, engineering, economics, and computer science, among other disciplines. This introductory course covers three content areas: Linear Algebra, Vector Algebra and Analytical Geometry. Each part contains basic mathematical conceptions and explains new mathematical terms. Many useful examples and exercises are presented in the textbook. explained and illustrated by examples and exercises.	
Course objectives	Matrix operations, determinants and systems of linear equations, geometrical applications of vector operations, introduction to analytical geometry	
Learning outcomes	By the end of the course the students should be able: 1. To do matrix operations 2. To compute determinants 3. To solve systems of linear equations 4. To solve problems about geometrical applications of vector operations	

Teaching methods		
Lecture		x
Group discussion		x
Experiential exercise		x
Course paper		x

Evaluation	Methods	Date/deadlines	Percentage (%)
	Midterm Exam		30
	Class Participation		5
	Quizzes		20 (3 quizzes)
	Activity		5
	Final Exam		40
	Total		100

Policy	▪ **Preparation for class** The structure of this course makes your individual study and preparation outside the class extremely important. The lecture material will focus on the major points introduced in the text. Reading the assigned chapters and having some familiarity with them before class will greatly assist your understanding of the lecture. After the lecture, you should study your notes and work relevant problems and cases from the end of the chapter and sample exam questions.

Throughout the semester we will also have a large number of review sessions. These review sessions will take place during the regularly scheduled class periods.

▪ **Attendance**

Students who do not attend more than 25 % of online classes will not be allowed to take the exam.

▪ **Quizzes and examinations**

Quizzes may be given unannounced throughout the term. There will be no make-up quizzes.

▪ **Withdrawal (pass/fail)**

This course strictly follows grading policy of the School of Science and Engineering. Thus, a student is normally expected to achieve a mark of at least 60% to pass. In case of failure, he/she will be required to repeat the course the following term or year.

▪ **Cheating/plagiarism**

Cheating or other plagiarism during the Quizzes, Mid-term and Final Examinations will lead to paper cancellation. In this case, the student will automatically get zero (0), without any considerations.

▪ **Professional behavior guidelines**

The students shall behave in the way to create favorable academic and professional environment during the class hours. Unauthorized discussions and unethical behavior are strictly prohibited.

▪ **Ethic**

Use of any electronic devices is prohibited in the classroom. All devices should be turned off before entering class. This is a university policy and <u>violators will be reprimanded accordingly!</u>

Tentative Schedule

We ek	Date/Day (tentative)	Topics	Textbook/ Assignments
1	18.09.2023 21.09.2023	Matrices: Basic definitions, Matrix operations, Types of matrices, Kronecker Delta Symbol, Properties of Matrix Operations	p. 7-19
2	25.09.2023 28.09.2023	Determinants: Permutations and Transpositions, Determinant General Definition, Properties of Determinants	p. 20-30
3	02.10.2023 05.10.2023	Determinant Calculation	p. 31-35
4	09.10.2023 12.10.2023	Inverse matrices: Three Lemmas, Theorem of Inverse Matrix, Calculation of Inverse Matrices by Elementary Transformations	p. 36-42

5	16.10.2023 19.10.2023	Systems of linear equations: Matrix Rank, Basic Concepts, Gaussian Elimination, Homogeneous Systems of Linear Equations	**Quiz (6 pts)** p. 43-53
6	23.10.2023 26.10.2023	Cramer's Rule, Cramer's General Rule	p.54-59
7	30.10.2023 02.11.2023	Vectors: Basic Definitions, Geometrical Interpretation	p. 60-65
8	06.11.2023 09.11.2023	Resolution of Vectors into Components, Scalar Product of Vectors Holiday	p. 65-71
9	13.11.2023 16.11.2023	**Midterm Exam** Vector Product, The Scalar Triple Product,	p. 72-77
10	20.11.2023 23.11.2023	Transformation of Coordinates Under Rotation of the Coordinate System	p. 79-81
11	27.11.2023 30.11.2023	Straight lines: Equations of lines, Lines in a Plane, Angle Between Two Lines	**Quiz (7 pts)** p. 82-89
12	04.12.2023 07.12.2023	Distance From a Point to a Line, Relative Position of Lines	p. 89-90
13	11.12.2023 14.12.2023	Planes: General Equation of a Plane, Equation of a Plane Passing Through Three Points, Other Forms of Equations of a Plane	p. 91-95
14	18.12.2023 21.12.2023	Angle Between Two Planes, Distance Between a Point and a Plane	p. 95-97
15	25.12.2023 28.12.2023	Relative Position of Planes, Relative Position of a Plane and a Line, Angle Between a Plane and a Line	**Quiz (7 pts)** p. 97-98
	TBA	**Final Exam**	

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