

LINEAR ALGEBRA AND ANALYTICAL GEOMETRY

COURSE SYLLABUS ABSTRACT of higher education institution

Speciality 1-28 01 02 – Digital Marketing

	STUDY MODE	
	full-time	part-time
Year	1	1
Semester	1	1
Lectures, hours	34	8
Practical classes (seminars), hours	34	8
In-class test (semester, hours)		1 (2 h)
Exam, semester	1	1
Contact hours	68	18
Independent study, hours	52	102
Total course duration in hours / credit units	120 / 3	120 / 3

1. Course outline: Linear algebra. Matrices and operations on them. Elementary transformations. Determinants of order n , their properties and calculation. Inverse matrix. Cramer systems of algebraic equations. Vectors, linear operations on vectors. Coordinate systems. Vector algebra. Straight line on the plane. Plane and line in space. Curves of the second order on the plane. Surfaces of the second order. Matrix rank. Theory of systems of linear algebraic equations. Linear spaces. Linear operators. Eigenvectors and eigenvalues. Linear operators in Euclidean space. Square shapes.

2. Course learning outcomes: upon completion of the course, students will be expected to

- know: basic positions of linear algebra and analytic geometry; matrix recording of linear equation systems; methods for solving systems of linear equations; How to describe lines and planes determining second-order curves on the Euclidean plane and second-order surfaces in Euclidean space; criteria of linear dependence of vectors;

- be able to: perform basic algebraic operations on matrices; perform algebraic operations on vectors in three-dimensional Euclidean space; calculate the determinant of square matrices by decomposing it into elements of a row (column) and using the method of equivalent transformations; solve systems of linear equations by the Gauss method, a system of inhomogeneous equations according to the Kra-measure formulas and the matrix method; Draw lines on a plane according to a given equation work with the simplest coordinate systems (Cartesian, polar); find eigenvalues and eigenvectors of natural matrices;

- possess: methods of analytical and numerical solution of algebraic equations; creative and analytical thinking skills.

3. Competencies: have the skills of creative analytical thinking (UC-12); apply matrix calculus methods, analyze solutions of systems of linear algebraic equations, investigate equations of curves and surfaces using analytical methods to solve applied engineering problems (BP-1).

4. Requirements and forms of midcourse evaluation and summative assessment

Modular rating system is used. Intermediate certification: control works. Current certification: exam.