

# LINEAR ALGEBRA AND ANALYTIC GEOMETRY

(course title)

## COURSE SYLLABUS ABSTRACT

6-05-0611-04 Electronic economy

(speciality code and name)

Electronic Marketing

(concentration)

	STUDY MODE	
	full-time	part-time
Year	1	1
Semester	1	1
Lectures, hours	34	8
Practical classes (seminars), hours	16	4
Pass/fail, semester	1	1
Contact hours	50	12
Independent study, hours	58	96
Total course duration in hours / credit units	108/3	

### 1. Course outline

Matrices and operations on them; elementary transformations of matrices; determinants of order  $n$ , their properties and calculation; inverse matrix; Cramer systems of algebraic equations; vectors, linear operations on vectors; coordinate systems; vector algebra; a straight line on a 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; eigenvalues and eigenvectors; linear operators in Euclidean space; quadratic forms.

### 2. Course learning outcomes

Upon completion of the course, students will be expected to

know: basic methods of analytical geometry, linear algebra; ways of describing straight lines and planes; definitions of curves of the second order on the Euclidean plane and surfaces of the second order in the Euclidean space; criteria for linear dependence of vectors; matrix notation of systems of linear equations; methods for solving systems of linear equations;

be able to: perform algebraic calculations with vectors in three-dimensional Euclidean space; build lines on a plane according to a given equation; work with the simplest coordinate systems (Cartesian, polar, cylindrical and spherical); perform basic algebraic operations on matrices; calculate the determinant of square matrices using expansion in row (column), as well as using the method of equivalent transformations; solve systems of linear equations by the Gauss method, systems of inhomogeneous equations by the Cramer method and the matrix method; find eigenvalues and eigenvectors of the simplest matrices;

to possess a skill: application of methods of analytical and numerical solution of algebraic equations; creative analytical thinking.

### 3. Competencies

BPC-1. Apply methods of matrix calculus, analyze solutions to systems of linear algebraic equations, investigate equations of curves and surfaces by analytical methods to solve applied engineering problems.

### 4. Requirements and forms of midcourse evaluation and summative assessment

Intermediate attestation - two computer tests, credit. Each of the computer tests is estimated from 0 to 30 points. The minimum credit score for each test is 18. The exam is scored from 0 to 40 points. The minimum score for passing the exam is 15. The final grade is determined in accordance with the table.

Mark	10	9	8	7	6	5	4	3	2	1	0
Points	100-94	93-87	86-80	79-72	71-65	64-58	57-51	50-41	40-17	16-1	0