Study programme(s): Mathematics (M), Applied Mathematics (MAP)
Course title: ANALYTIC GEOMETRY (M104)
Lecturer(s): Milica Žigić
Course status: elective (M), compulsory on module: Techno-mathematics (MAP)
ECTS points: 5
Requirements:

Learning Objectives

Obtaining knowledge in using characteristic tools and methods of analytic expressions in planar geometry and spatial geometry, relatively limited to linear objects, curves of second and surfaces of second order, as well as their mutual relationships.

Learning Outcomes

Skills of deriving analytic formulas which characterize elementary geometric objects in Euclidean space. An adequate application of these formulas in problem solving and an appropriate geometric interpretation of the results.

Syllabus

Theoretical instructions

Various coordinate systems and transition from one to another. Equations of a line. Position of lines on a plane. Pencils. Conic sections. Focal parameter. Directrices. Geometric objects on a plane and their relationships. Vectors and various vector products. Projections. Space. Point, straight line, plane, and their mutual relationships. Orientation. Affine transformations. Algebraic curves and surfaces. Second order surfaces and their classification. Conic, cylindrical and rotational surfaces. Parametric curves. Some curves (cycloid, spiral of Archimedes, …)

Practical instructions

Solving problems related to the content of the theoretical lectures.

Literature

1. Z. Stojaković, D. Herceg: **Linearna algebra i analitička geometrija**, UNS, Novi Sad, 1992.

2. N. Blažić, N. Bokan, Z. Lučić, Z. Rakić: **Analitička geometrija**, Matematički fakultet, Beograd, 2003.

3. D. Jojić, Đ. Paunić: **Analitička geometrija**, PMF, Banja Luka, 2016.

4. G. Thomas, R. Finney: **Calculus and Analytic Geometry**, Addison- Wesley, Reading, 1984.

Number of active classes	**Lectures: 2**		**Exercises: 2**	

Teaching methods

Lectures: Exposition of theoretical foundations with comments.

Exercises: Problem solving sessions and applications of the acquired theoretical knowledge.

Grading (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
colloquia	**50**	oral exam	**50**