Study programmes: BACHELOR STUDIES – Astronomy and Astrophysics	
Course name: Mathematics 2	
Lecturers: Branka Pavlović and other lecturers	
Status: Compulsory	
ECTS: 9	
Attendance prerequisites: No prerequisites.	

Course aims: Introduction to linear algebra, analytic geometry, and multivariate calculus. Ability to solve systems of linear equations and to do calculations with matrices. Mastering of differential and integral calculus which is neccessary in physics applications.

Course outcome: Understanding basic notions in linear algebra, analytic and differential geometry. Basic level of operative knowledge of multivariate calculus, solving systems of linear equations and working with matrices.

Course content:

1. Linear algebra: notion of a matrix and a determinant; transposition, rank and inverse of a matrix; systems of linear equations; Cramer and Kronecker-Capelli theorems. (10 lectures)

2. Analytic geometry: straight line and flat surface and various forms of their equations; second order curves and their canonic forms. (10 lectures)

3. Functions with multiple variables: notion of a metric space (completness, compactness and connectedness); limit, continuity, partial derivatives, differentiability and basic theorems concerning these; gradient; Taylor's formula; extreme values; implicit and inverse function theorems.

4. Differential geometry: curve and its natural trihedron, first and second curvature; surfaces; gradient, divergence, curl. (8 lectures).

5. Integrals: in two variables, in three variables, on curves and sufaces (definitions, calculations, examples); formulae of Green, Stokes, and Gauss-Ostrogradsky. (16 lectures)

Literature:

1. D. Adnadjević, Z. Kadelburg, Matematička analiza 2, 6. ed., Matematički fakultet, Krug, Beograd 2011.
2. V. Jevremović, Matematika 1 - predavanja, Univerzitet u Beogradu, Gradjevinski fakultet, Beograd, 2001.

Number of hours: 8	**Lectures**: 4	**Tutorials**: 4	**Laboratory**: -	**Research**: -

Teaching and learning methods:

Lectures (presentation of theory and working out of the main examples),
Teaching assistant sessions (problem solving), midterm examinations.

Assessment (maximal 100 points)				
Course assignments	**points**	**Final exam**		**points**
Lectures	-	Written exam		60
Exercises / Tutorials	-	Oral exam		40
Colloquia	-	Written-oral exam		-
Essay / Project	-			