Study Program: Mathematics

Type and level of studies: Bachelor studies, III semester

Course name: Mathematical Analysis 3

Lecturer: Jelena Z. Vujaković

Status: Compulsory

ECTS: 9

Attendance Prerequisites: Mathematical Analysis 1, Mathematical Analysis 2

Course aims

Acquiring basic knowledge of Mathematical Analysis related to the functions of several variables, differential and integral calculus.

Course outcome

The student should grasp the concepts of functions of several real variables, the concepts of differential and integral calculus of such functions and should be able to apply them.

Course content

Theoretical part

Metric space. Definitions, basic features, examples. Descriptive properties of sets. Separable spaces, complete spaces. Banach's position on the fixed point. Continuity.

Functional strings and sequences. Ordinary and uniform convergence of a family of functions. Uniform convergence of functional series. Functional properties of a boundary function. Degree series, analytical functions. Approximation of continuous functions by polynomials.

Differential calculus of functions of several variables. Partial derivatives and differentiability of real functions. Differentiability of vector functions. Differentiation rules. Mean value theorem. Directional derivative, gradient. Higher order partial derivatives. Taylor's formula. Local extrema.

Implicit functions. Implicit functions with real and vector values. Conditional extrema.

Some applications of differential calculus in geometry.

Practical part

Practice is done in accordance with the theoretical part.

Literature

1. Д. Аднађевић, З. Каделбург, Математичка анализа II, Математички факултет, Београд 2008;
2. С. Аљанчић, Увод у реалну и функционалну анализу, Грађевинска књига, Београд 1968;
3. С. Раденовић, Математичка анализа II-методска збирка задатака, Математички факултет, Београд 2002.

Number of active classes				Other classes
Lectures: 2	Practical classes: 2	Other forms of teaching:	Students' research work	

Teaching methods

Lectures, calculation exercises, laboratory exercises, consulting, term papers, homework, written exam.

Assessment (maximum 100 points)

Course assignments	**points**	Final exam	**points**
activity during lectures	**10**	written exam	**30**
practical classes		oral exam	**20**
term test(s)	**20**	.....	
seminar(s)	**20**		
Total	**50**		**50**