

Study Program: Mathematics				
Type and level of studies: Bachelor studies, V semester				
Course name: Real Analysis				
Lecturer: Ivan D. Arandelović				
Status: Compulsory				
ECTS: 8				
Attendance Prerequisites: Mathematic analysis 3, Mathematical analysis 4				
Course aims Introducing to students the basic topological properties of metric spaces, as well as to the theory and applications of the Riemann-Stiltjes and Lebesgue integrals.				
Course outcome Understanding basic concepts of the theory of metric spaces, Riemann-Stiltjes and Lebesgue integrals. Developing the ability to apply abstract mathematical theories in solving specific problems of applied mathematics and natural sciences.				
Course content <i>Theoretical Part:</i> Metric spaces. Basic terms, definitions, features and examples. Convergence and continuity. Compactness. Connection. Completeness. Baire’s and Banach's theorem. Applications of Banach's theorem. Riemann-Stiltjes integral. Monotone functions. Functions of limited variation. Definition and basic properties of the Riemann-Stiltjes integral. Calculating the Riemann-Stiltjes integral. Basic applications of the Riemann-Stiltjes integral. Lebesgue measure. Measurable sets. Measurable functions. Definition and basic properties of Lebesgue measure. Lebesgue integral. Definition and basic properties of the Lebesgue integral. Theorems of Fatou, Bepo-Levi and Lebeга. Calculation and applications of the Lebesgue integral. L^p spaces. Absolutely continuous functions. <i>Practical part:</i> Classroom exercises are in accordance with the course of lectures, on the same thematic units.				
Literature 1. 1. С. Аљанчић, Увод у реалну и функционалну анализу, „Завод за уџбенике“, Београд 2012. 2. Д. Кечкић, Анализа 3, збирка задатака, „Кечкић“, Београд 2005. 3. М. Марјановић, Метрички простори, стилтјесов и Лебегов Интеграл, Научна књига, Београд 1968				
Number of active classes				Other classes
Lectures: 3	Practical classes: 3	Other forms of teaching:	Students’ research work:	
Teaching methods Lectures (3 classes per week), calculation exercises (2 classes per week), laboratory exercises (2 classes per week), term papers, homework, written exam.				
Assessment (maximum 100 points)				
Course assignments	points	Final exam		points
activity during lectures	5	written exam		35
practical classes	-	oral exam		30
term test(s)	20			
seminar(s)	10			
Total	35			65