

Study program: Mathematics				
Type and level of studies: Undergraduate studies				
Course unit: Functional Analysis				
The teacher in charge: Assistant Professor, Suzana Aleksić				
Language of instruction: English				
ECTS: 9 (nine)				
Prerequisites: Real Analysis				
Semester: <i>Summer Semester</i>				
Course unit objective: This course provides an introduction to the methods and fundamental concepts of functional analysis, including Banach spaces and Hilbert spaces with examples and linear operators on these spaces. The aim of this course is to cover fundamental theorems of functional analysis and their applications.				
Course unit contents				
Lectures: Metric space (Convergence, Cauchy sequence, Completeness, Separable metric space, Compact sets); Normed and Banach spaces; Inner product space and Hilbert space; Orthonormal sets and sequences; Total orthonormal sets; Bounded linear operators and functionals in a normed space; Dual space; Adjoint operator; Riesz representation theorem; Self-adjoint, unitary and normal operators; Fundamental theorems of functional analysis (Banach fixed point theorem, Hahn-Banach theorem, Banach-Steinhaus theorem, Open mapping theorem, Closed graph theorem and consequences and applications).				
Practical teaching: study research work				
Literature				
1. W. Rudin, <i>Functional Analysis</i> , Second Edition, International Series in Pure and Applied Mathematics, McGraw-Hill, Inc., 1991.				
2. C. Heil, <i>A Basis Theory Primer</i> , Expanded Edition, Birkhäuser, Boston, 2011.				
Number of active teaching hours				Other classes
Lectures: 4	Practice: 3	Other forms of classes: mentoring system 1	Independent work: 0	
Teaching methods				
Lectures in traditional manner using black board, discussions, consultation with the professor				
Examination methods (maximum 100 points)				
Exam prerequisites		No. of points:	Final exam	No. of points:
Student's activity during lectures		4	oral examinations	50
tests		46		
Grading system				
Grade	No. of points		Description	
10	91-100		Excellent	
9	81-90		Exceptionally good	
8	71-80		Very good	
7	61-70		Good	
6	51-60		Passing	
5	0-50		Failing	