

Study program: Mathematics				
Type and level of studies: Master academic studies				
Course unit: Selected chapters of Analysis				
The teacher in charge: Assistant Professor, Suzana Aleksic				
Language of instruction: English				
ECTS: 9 (nine)				
Prerequisites: /				
Semester: <i>Winter Semester</i>				
<p>Course unit objective: Working with the course teacher the student develops the ability of abstract thinking and acquiring basic knowledge in Analysis and its applications. The presentation of the theoretical part is followed by the characteristic examples which facilitate understanding and contribute to better understanding of the theoretical part. During practice classes, which accompany the lectures, some characteristic problem tasks are done and the presented material is discussed in more detail. Through research and study work the student will develop further understanding of the material covered in lectures.</p> <p>Part of the course is in the form of independent research and study in the field of analysis.</p>				
<p>Course unit contents</p> <p>Lectures:</p> <p>Metric spaces. Metric spaces \mathbf{R}, \mathbf{R}^2, \mathbf{R}^3, \mathbf{C} and function spaces. Ball neighborhoods, open subsets, limit points, closed subsets, dense subsets.</p> <p>Convergence. Convergent sequences in metric spaces \mathbf{R}, \mathbf{R}^2, \mathbf{R}^3, \mathbf{C} and in function spaces. Cauchy sequences. Completeness. Compact subsets of metric spaces. Separable space. Connectedness.</p> <p>Functions. Real function of a real variable. Linear operators.</p> <p>Continuity. Continuity of real functions.</p> <p>Derivatives. Derivative of real functions.</p> <p>Measure. Measure sets. Measure functions. Outer measure. Lebesgue measure.</p> <p>Integration. Riemann integral. Riemann-Stieltjes integral. Lebesgue integral.</p> <p>Practical teaching: study research work</p>				
Literature				
<ol style="list-style-type: none"> G.N. Berman, I.N. Sneddon, M. Stark and S. Ulam, <i>A Collection of Problems on a Course of Mathematical Analysis</i>, PERGAMON PRESS Ltd, First English edition, 1965. W. Rudin, <i>Principles of Mathematical Analysis (International Series in Pure and Applied Mathematics)</i>, 3rd ed. McGraw-Hill, 1976. W. Rudin, <i>Real and Complex Analysis</i>, McGraw-Hill International Editions: <i>Mathematics Series</i>, McGraw-Hill Education - Europe, 1986. 				
Number of active teaching hours				Other classes
Lectures: 3	Practice: 2	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