

Specification for the book of courses

Study program		Electrical Engineering and Computer Science		
Module		Common		
Type and level of studies		Doctoral studies		
The name of the course		Analysis of Numerical Algorithms		
Lecturer (for lectures)		Marjanović M. Zvezdan		
Lecturer/associate (for exercises)				
Lecturer/associate (for OFE)				
Number of ECTS	10	Course status (obligatory/elective)	Elective	
Prerequisites				
Course Acquiring knowledge in numerical mathematics.				
Course outcomes Students' ability to apply acquired knowledge in the profession.				
Course outline				
Theoretical teaching	Problems of linear algebra. Direct and iterative methods for solving a system of linear equations, matrix inversion, and the finding matrix eigenvalues. Ill-conditioned systems. Nonlinear equations and systems. Newton and other methods. Method of Newton - Kantorovich. Algebraic equations. Bernoulli's method. Simultaneous method. Gauss - Seidel's approach. Approximation of functions. Interpolation. Problem of the best approximations. Differentiation and integration. Newton - Cotes and Gaussian quadrature formulas. Acceleration methods: convergence of sequences and series, matrix multiplication. Aitken method. Euler - Abel transformation. Fast Fourier Transformation (FFT).			
Practical teaching (exercises, OFE, study and research)				
Textbooks/references				
1	G. V. Milovanović: Numerical analysis I (in Serbian). Scientific Book, Belgrade 1991.			
2	G. V. Milovanović: Numerical analysis II (in Serbian). Scientific Book, Belgrade 1991.			
3	G. V. Milovanović: Numerical analysis III (in Serbian). Scientific Book, Belgrade 1991.			
4	G.V. Milovanović, M.A. Kovačević, M.M. Spalević: Numerical Mathematics – A Collection of Solved Problems (in Serbian), Faculty of Electronic Engineering, Niš, 2003.			
5	Dobrilo Dj.Tošić: Introduction to numerical analysis with a collection of tasks and problems (in Serbian). Academic mind, Belgrade, 2004.			
Number of classes of active education per week during semester/trimester/year				
Lectures	Exercises	OFE	Study and research work	Other classes
3	0	0	0	0
Teaching methods	Presentations on specific topics, seminars and projects.			
Grade (maximum number of points 100)				
Pre-exam duties		Points	Final exam	Points
Activity during lectures			Written exam	
Exercises			Oral exam	50
Colloquia				
Projects		50		