

## Specification for the book of courses

<b>Study program</b>		Electrical Engineering and Computer Science		
<b>Module</b>		Common		
<b>Type and level of studies</b>		Doctoral studies		
<b>The name of the course</b>		Numerical Mathematics		
<b>Lecturer (for lectures)</b>		Marjanović M. Zvezdan		
<b>Lecturer/associate (for exercises)</b>				
<b>Lecturer/associate (for OFE)</b>				
<b>Number of ECTS</b>	10	<b>Course status (obligatory/elective)</b>	Elective	
<b>Prerequisites</b>				
Mastering theoretical and practical knowledge in some areas of numerical mathematics (error propagation and ill-conditioned systems, iterative processes, solving operator equations and their concretization, quadrature processes, approximately solving ordinary and partial differential equations) using the Mathematica programming package.				
<b>Course objectives</b>				
Theoretical and practical knowledge; Mastering use of Mathematica software package.				
<b>Course outcomes</b>				
Theoretical and practical knowledge; Mastering use of Mathematica software package.				
<b>Course outline</b>				
Arithmetic of finite length and numerical processes. General theory of iterative processes. Application to operator equations. Nonlinear equations and systems. Quadrature processes and convergence. Cauchy's problems and contour problems for ordinary differential equations. Grid method for partial differential equations. Symbolic computation and algorithms. Implementation of algorithms using the Mathematica package.				
<b>Theoretical teaching</b>				
Arithmetic of finite length and numerical processes. General theory of iterative processes. Application to operator equations. Nonlinear equations and systems. Quadrature processes and convergence. Cauchy's problems and contour problems for ordinary differential equations. Grid method for partial differential equations. Symbolic computation and algorithms. Implementation of algorithms using the Mathematica package.				
<b>Practical teaching (exercises, OFE, study and research)</b>				
<b>Textbooks/references</b>				
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	B.Jovanović: Numerical methods for solving partial differential equations (in Serbian). Mathematical Institute, Belgrade 1989.			
5	G.V. Milovanovic, M.A. Kovacevic, M.M. Spalevic: Numerical Mathematics – A Collection of Solved Problems (in Serbian), Faculty of Electronic Engineering, Niš, 2003.			
<b>Number of classes of active education per week during semester/trimester/year</b>				
<b>Lectures</b>	<b>Exercises</b>	<b>OFE</b>	<b>Study and research work</b>	<b>Other classes</b>
3	0	0	0	0
<b>Teaching methods</b>				
Lectures. Computer exercises. Consultations.				
<b>Grade (maximum number of points 100)</b>				
<b>Pre-exam duties</b>		<b>Points</b>	<b>Final exam</b>	<b>Points</b>
<b>Activity during lectures</b>			<b>Written exam</b>	
<b>Exercises</b>			<b>Oral exam</b>	50
<b>Colloquia</b>				
<b>Projects</b>		50		