

## Specification for the book of courses

<b>Study program</b>		Electrical Power Engineering		
<b>Module</b>		Electrical Power Engineering		
<b>Type and level of studies</b>		Master studies		
<b>The name of the course</b>		Methods of optimization		
<b>Lecturer (for lectures)</b>		Marinković D. Slađana		
<b>Lecturer/associate (for exercises)</b>		Jovančić S. Vladan		
<b>Lecturer/associate (for OFE)</b>				
<b>Number of ECTS</b>		5	<b>Course status (obligatory/elective)</b>	Elective
<b>Prerequisites</b>				
<b>Course objectives</b>		Gaining basic mathematical knowledge of optimization and different optimization methods. Developing skills of mathematical modelling of real problems of practice, as well as solving them.		
<b>Course outcomes</b>		Students' competence to put the gained knowledge into practice. Competence to identify and define the optimization problems of practice, develop mathematical models, choose the appropriate methods for their solving and the application of methods.		
<b>Course outline</b>				
<b>Theoretical teaching</b>		Defining the general optimization problem. Theoretical basis of optimization. Elements of convex analysis. Linear programming. Duality. Simplex method. Nonlinear programming. Unconstrained optimization. Searching methods. Gradient methods. Constrained optimization. Kuhn-Tucker conditions. Lagrange multipliers method. Penalty functions methods. Quadratic programming. Basis of multiobjective optimization. Overview of heuristic methods.		
<b>Practical teaching (exercises, OFE, study and research)</b>		Exercises of knowledge gained in the lectures. Implementation of optimization algorithms by the appropriate software.		
<b>Textbooks/references</b>				
1	Lj. M. Kocić, G. V. Milovanović, S. Marinković, Operational research, University of Niš, Faculty of Electronic Engineering, 2007. (Serbian)			
2	G.V. Milovanović, P.S. Stanimirović: Symbolic Implementation of Nonlinear Optimization, University of Niš, Faculty of Electronic Engineering, Niš, 2002 (Serbian).			
3	K. Y. Lee and M. A. El-Sharkawi, Modern Heuristic Optimization Techniques: Theory and Applications to Power Systems, Wiley, 2008.			
4				
5				
<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>
2	2	0		
<b>Teaching methods</b>		Lectures, 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>	40
<b>Exercises</b>			<b>Oral exam</b>	20
<b>Colloquia</b>				
<b>Projects</b>		40		