

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		Optimisation Methods in Power Engineering		
Lecturer (for lectures)		Tasić S. Dragan, Marinković D. Slađana		
Lecturer/associate (for exercises)				
Lecturer/associate (for OFE)				
Number of ECTS		10	Course status (obligatory/elective)	Elective
Prerequisites				
Course objectives		The objective of the course is to prepare students to be independent in application of modern optimization methods and solving complex power system optimisation problems.		
Course outcomes		After finishing this course, students will be able to apply the modern optimization methods and to solve complex power system optimisation problems.		
Course outline				
Theoretical teaching		Significance of the power system optimization methods. Definition of the optimization problem. Linear programming. Simplex and dual simplex. Transport problem. Network Flow programming. Illustrations on power system problems. Nonlinear programming. Gradient methods. Newton's and Quasi-Newton's methods. Quadratic programming. Illustrations on power system problems. Complex optimisation problems. Illustrations on power system problems. Dynamic, Geometric and Multi-objective programming and their application for solving power system problems. Metaheuristic methods and their application on power system optimization. Typical static and dynamic optimization problems: optimal power flow, optimal planning problems, unit commitment problems, voltage-reactive power static and dynamic optimization problems.		
Practical teaching (exercises, OFE, study and research)				
Textbooks/references				
1		J. A. Momoh, Electric Power System Application of Optimization, Marcel Dekker, New York, 2009.		
2		J. Radosavljević, Metaheuristic Optimization in Power Engineering, IET The Institution of Engineering and Technology, 2018.		
3		A. Savić, D. Šošić, G. Dobrić, M. Žarković, Methods of optimization - Applications in electric power, Akademska misao, Belgrade, 2018. (in Serbian)		
4		Y.H. Song (Editor), Modern Optimization Techniques in Power Systems, Kluwer Academic Publishers, 1990.		
5		Д. А. Арзамасцев, А. В. Липес, Оптимизационные модели развития электрических сетей энергосистем, Уральский политехнический институт, Свердловск, 1987.		
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		Lectures, Discussions, Research work.		
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		