

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		Optimal Control		
Lecturer (for lectures)		Antić S. Dragan, Veselić R. Boban		
Lecturer/associate (for exercises)				
Lecturer/associate (for OFE)				
Number of ECTS	10	Course status (obligatory/elective)	Elective	
Prerequisites				
Course objectives	To obtain knowledge about modern methods in optimal control of industrial systems as well as optimal control in digital systems.			
Course outcomes	Ability to design optimal controllers and to apply them in industry and distributed systems. Forming of optimal control strategies and their implementation in control of complex and hierarchical systems.			
Course outline				
Theoretical teaching	Calculus of variations. Maximum principle. Normal and singular problem of optimal control. Structure and design of optimal controllers. Selected topics in dynamical systems optimization. Dynamic programming. Hamilton-Jacobi-Bellman differential equation. Optimal solution as a function of the state vector. Singular control in some linear systems with quadratic cost function. Optimal control in digital systems.			
Practical teaching (exercises, OFE, study and research)				
Textbooks/references				
1	D. Naidu, "Optimal Control Systems", CRC Press, 2003.			
2	C. MacCluer, "Calculus of Variations", Prentice Hall, 2005.			
3	F. L. Lewis, V. L. Syrmos: Optimal Control, John Wiley&Sons. Inc., New York, 1995.			
4				
5				
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 / consultation (in accordance with the number of students); scientific research (review of the literature, practical problem analysis and finding solution, writing and presentation of individual paper).			
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			