

Specification for the book of courses

Study program		Electrical Engineering and Computer Science		
Module		Electrical Power Engineering		
Type and level of studies		Undergraduate Academic Studies		
The name of the course		Electrical Drives		
Lecturer (for lectures)		Mitrović N. Nebojša		
Lecturer/associate (for exercises)		Kostić Z. Vojkan, Banković G. Bojan		
Lecturer/associate (for OFE)		Kostić Z. Vojkan, Banković G. Bojan		
Number of ECTS	5	Course status (obligatory/elective)	Obligatory	
Prerequisites				
Course objectives	Introducing students to the role and importance of electric drives. Types, structures, methods of analysis and static characteristics in terms of practical application.			
Course outcomes	Basic principles and structure of electric drives. The ability to perceive a complex electromechanical system through the functional connectivity of the power converters, electrical machines and load. Knowing the steady state characteristics.			
Course outline				
Theoretical teaching	The importance of electric drives. Selection of an electric motor. Drive characteristics with DC motors. Mathematical models, steady state characteristics, equivalent circuit. Electric braking methods. Control techniques. Combined voltage and flux control. Application of converters to DC drives. Drives with induction and synchronous motors. Basic equations. Equivalent circuit. The influence of voltage, parameters and frequency variation. Electric braking methods. Voltage and current converters for AC motor drives. Steady static characteristics. Application of inverter. Control methods.			
Practical teaching (exercises, OFE, study and research)	In laboratory experiments on real machines is implemented practical training which includes: - Drives with DC motors (analysis of working regime, control methods, braking regime). - Drive with induction and synchronous machines (analysis of working regime, control methods, braking regime). - The application of converters in DC and AC drives			
Textbooks/references				
1	Jens Weindauer, Richard Messer, "Electrical drives", Public Publishing, Erlangen, 2014.			
2	Vedam Subrahmanyam, "Electric Drives", Mc Graw Hill, New Delhy 2011.			
3	Austin Hughes, Bil Drury " Electric motor and drives" Elsevier, 2013.			
4	R. Krishnan, "Electric Motor Drives", Virginia Tech, Prantice Hall 2001			
5	W. Leonhard: "Control of Electrical Drives", Springer-Verlag Berlin, 1985			
Number of classes of active education per week during semester/trimester/year				
Lectures	Exercises	OFE	Study and research work	Other classes
2	2	1	0	0
Teaching methods	Classes are conducted through lectures and exercises. Lectures use modern teaching methods. Auditory exercises with numerous example refer students to independently solve problems from engineering practice. Part of the exercise is performed in the laboratory in order to obtain the steady state characteristics of drives.			
Grade (maximum number of points 100)				
Pre-exam duties	Points	Final exam		Points
Activity during lectures	5	Written exam		30
Exercises	15	Oral exam		20
Colloquia	30			
Projects				