

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		Power Electronics		
Lecturer (for lectures)		Mančić D. Dragan		
Lecturer/associate (for exercises)				
Lecturer/associate (for OFE)				
Number of ECTS		10	Course status (obligatory/elective)	Elective
Prerequisites				
Course objectives		Expanding and upgrading the fundamental knowledge acquired in the field of power electronics and guidance towards the adoption of new techniques required by concrete and specific applications which are subject of interest to students.		
Course outcomes		Students gain the necessary theoretical and practical knowledge to meet any specific request in development, modeling, performance assessment, optimization, realisation, control, practical application and verification of the various devices of power electronics with medium level of complexity, primarily of the various power electronic converters.		
Course outline				
Theoretical teaching		Types of semiconductor power electronic switches. AC/DC converters. Rectifiers in switching mode of operation. Rectifiers for power factor corrector. Multi-quadrant work. DC/DC converters. DC/AC converters. Soft starters, frequency converters. Converters for medium voltage levels. Methods of control. Direct AC/AC converters. Sizing the components of inverter. Influence of converters on the power grid and electrical consumers. Utilization of special purpose softwares in the operation analysis of inverters.		
Practical teaching (exercises, OFE, study and research)				
Textbooks/references				
1	N.Mohan, T.M.Undeland, W.P.Robbins, "Power electronics: Converters, Applications, and Design", John Wiley & Sons., New York, 2007.			
2	M.H.Rashid, "Power electronics, Circuits, Devices and Applications", Pearson Education, Inc., New Jersey, 2013.			
3	M.H.Rashid, "Power Electronics Handbook", Elsevier Science, 2017.			
4	P.C.Sen, "Principles of Electric Machines and Power Electronics", John Wiley & Sons Inc., New Jersey, 2013.			
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		Teaching is held in lectures while simultaneously mentoring students. Individual and team work of students takes place during their practical and scientific and research work on the defined projects.		
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		