

Specification for the book of courses

Study program		Electrical Engineering and Computer Science		
Module		Electronics - Electronic Circuits and Embedded Systems		
Type and level of studies		Undergraduate Academic Studies		
The name of the course		Fundamentals of Power Electronics		
Lecturer (for lectures)		Mančić D. Dragan		
Lecturer/associate (for exercises)		Jovanović D. Igor		
Lecturer/associate (for OFE)		Jovanović D. Igor		
Number of ECTS	6	Course status (obligatory/elective)	Obligatory	
Prerequisites				
Course objectives	Acquiring the fundamental knowledge about power electronics, components of power electronics and the fundamental circuits in which they are applied.			
Course outcomes	Theoretical knowledge on fundamentals of power electronics. Mastering the techniques of development, realisation and application of the basic circuits of power electronics.			
Course outline				
Theoretical teaching	Introduction to power electronics. Components of power electronics (diode, bipolar transistor, thyristor, MOSFET, IGBT). Application technique of power components (cooling, protection, joint operation of components). Basic circuits with diodes and thyristors. AC voltage controllers. Natural and forced commutation. Sources of DC voltage (diode rectifiers, thyristor rectifiers).			
Practical teaching (exercises, OFE, study and research)	Basic circuits of power electronics; Single-phase voltage regulator; Three-phase voltage regulator; Single-phase diode rectifier; Three-phase diode rectifier.			
Textbooks/references				
1	M.Radmanovic, D.Mancic, "Problems And Solutions In Power Electronics" (in Serbian), Faculty of Electronic Engineering Nis, 1995.			
2	N.Mohan, T.M.Undeland, W.P.Robbins, "Power electronics: Converters, Applications, and Design", John Wiley & Sons., New York, 2007.			
3	M.H.Rashid, "Power electronics, Circuits, Devices and Applications", Pearson Education, Inc., New Jersey, 2013.			
4	M.H.Rashid, "Power Electronics Handbook", Elsevier Science, 2017.			
5	L.A.Kumar, A.Kalaiarasi, Y.U.Maheswari, "Power Electronics with MATLAB", Cambridge University Press, Cambridge, 2018.			
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	Lectures; Auditorial exercises; Laboratory exercises; Computer exercises; Consultations.			
Grade (maximum number of points 100)				
Pre-exam duties	Points	Final exam	Points	
Activity during lectures	10	Written exam	20	
Exercises	15	Oral exam	20	
Colloquia	20			
Projects	15			