Specification for the book of courses

Study program		Electrical Power Engineering		
Module		Electrical Power Engineering		
Type and level of studies		Master studies		
The name of the course		Electromagnetic Compatibility in Power Engineering		
Lecturer (for lectures)		Javor L. Vesna		
Lecturer/associate (for exercises)		Javor L. Vesna		
Lecturer/associate (for OFE)				
Number of ECTS	5	**Course status (obligatory/elective)**	Elective	
Prerequisites	No			
Course objectives	Teaching students about basic principles and techniques of electromagnetic compatibility (EMC) and testing equipment of EMC laboratories. Study of EMC standards. Application of principles and techniques of EMC in the field of power engineering.			
Course outcomes	Students' ability to apply electromagnetic compatibility (EMC) standards, procedures for testing EMC in the laboratory, principles and techniques of EMC in the field of power engineering.			
Course outline				
Theoretical teaching	Electromagnetic compatibility (EMC), interference (EMI), susceptibility (EMS), disturbance (EMD). Types of EMC problems. Requirements, standards and directives. Standardization bodies. Limits and benefits of EMC requirements application. CE marking of conformity with European standards. Design and testing of circuits, devices and systems in accordance with EMC requirements. Basic parameters of power quality in low voltage (LV) and middle voltage (MV) network. EMC with power supply network. Sources and levels of interference. Radiated and conductive emissions. Laboratory equipment for EMC testing and test methods. LISN, measuring receivers, network analyzers, spectrum analyzers, antennas and probes for EMC testing. Elementary electric and elementary magnetic dipole. Measurement sites for EMC testing: Faraday cage, reverberation, anechoic and semianechoic chamber, TEM and GTEM cells. Differential mode and common mode currents. EMC principles and techniques: shielding (shielding efficiency, holes and slots), grounding, filtering (passive LP, HP, BP and BS filters), non-ideal behavior of resistors, capacitors and inductors, selection according to EMC requirements. Ferrites and ferrite chokes. Losses due to absorption and reflection. Practical examples of solving EMC problems.			
Practical teaching (exercises, OFE, study and research	Exercises and a visit to the EMC testing laboratory.			
Textbooks/references				
1	Ott H. W., "Electromagnetic compatibility engineering," John Wiley & Sons, 2009.			
2	Williams T., "Electromagnetic compatibility for product designers," Newnes, 2016.			
3	Lattarulo F., "Electromagnetic compatibility in power systems," Elsevier, 2007.			
4	Keiser K., "Electromagnetic compatibility handbook," CRC Press, 2004.			
5	Đorđević A., Olćan D., "Electromagnetic compatibility testing," (in Serbian), Academic Mind, Belgrade, 2012.			

Number of classes of active education per week during semester/trimester/year				
Lectures	**Exercises**	**OFE**	**Study and research work**	**Other classes**
2	2	0		
Teaching methods	Lectures, exercises and consultations.			

Grade (maximum number of points 100)			
Pre-exam duties	**Points**	**Final exam**	**Points**
Activity during lectures	10	**Written exam**	20
Exercises	10	**Oral exam**	20
Colloquia	40		

Projects			