

Specification for the book of courses

Study program		Electrical Engineering and Computer Science		
Module		Control Systems		
Type and level of studies		Undergraduate Academic Studies		
The name of the course		Electromagnetic Compatibility of Devices and Systems		
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), as well as about the equipment of EMC testing laboratory. Study of EMC standards and application of EMC principles during the design and realization of devices and systems.			
Course outcomes	Students' ability to apply electromagnetic compatibility (EMC) standards, procedures for testing EMC devices and systems, principles and techniques of EMC.			
Course outline				
Theoretical teaching	Sources of electromagnetic disturbances (natural and artificial). Electromagnetic compatibility (EMC) and electromagnetic interference (EMI). EMC requirements, standards and directives in different fields. Limits and benefits of EMC principles application. Design of circuits and devices according to EMC requirements. Levels of disturbances. Coupling via electromagnetic fields and conductive paths. Types of electromagnetic coupling. Absorption, reflection and penetration depth of EM waves. EMC equipment, chambers and methods of testing. Faraday cage, reverberation, anechoic and semianechoic chamber, TEM and GTEM cells. Principles and techniques for the design of devices and systems. Choice of configurations and components according to EMC. Separation. Shielding (shielding efficiency, holes and slots in the shields, transfer impedance). Grounding. Filtering. Non-ideal behavior of passive components and selection according to EMC principles. Cables, connectors, protection of contacts. Ferrite chokes. Reduction of harmonics in order to improve the power quality. Electrostatic discharge. Practical examples of solving EMC problems.			
Practical teaching (exercises, OFE, study and research)	Computer exercises and application of EMC standards.			
Textbooks/references				
1	Williams T., "Electromagnetic compatibility for product designers," Newnes, 2016.			
2	Keiser K., "Electromagnetic compatibility handbook," CRC Press, 2004.			
3	Ott H. W., "Electromagnetic compatibility engineering," John Wiley & Sons, 2009.			
4	Đorđević A., Olčan D., "Electromagnetic compatibility testing," (in Serbian), Academic Mind, Belgrade, 2012.			
5	Paul C., "Introduction to electromagnetic compatibility," John Wiley & Sons, 2006.			
Number of classes of active education per week during semester/trimester/year				
Lectures	Exercises	OFE	Study and research work	Other classes
2	2	0	0	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				