



Subject card

Subject name and code	Electromagnetic Compatybility of Electrical Power Equipment, PG_00018269						
Field of study	Electrical Engineering						
Date of commencement of studies	October 2022		Academic year of realisation of subject		2022/2023		
Education level	second-cycle studies		Subject group				
Mode of study	Part-time studies		Mode of delivery		at the university		
Year of study	1		Language of instruction		Polish		
Semester of study	2		ECTS credits		2.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Power Electronics and Electrical Machines -> Faculty of Electrical and Control Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Jarosław Łuszcz				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	10.0	0.0	10.0	0.0	0.0	20
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	20		5.0		25.0	50
Subject objectives	Identification of electromagnetic interference issues in electrical devices.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K7_W02		Organization of knowledge in the field of electromagnetic compatibility		[SW1] Assessment of factual knowledge		
	K7_U03		Acquisition Ability information from literature		[SU2] Assessment of ability to analyse information		
	K7_W01		Knowledge of the sources of knowledge specialized expanding scope of program content.		[SW1] Assessment of factual knowledge		
	K7_U02		Knowledge of the sources of knowledge specialized expanding scope of program content.		[SU5] Assessment of ability to present the results of task		
Subject contents	Sources and propagation of conducted add radiated disturbances. Electromagnetic emission and immunity of electrical devices. EMC in power electronics. EMC and LVD Directives, harmonized standards, certification tests of electrical devices. Electromagnetic interference limitation (grounding, shielding, filtration, separation, balancing). Basic anti-interference elements (capacitors, inductors, RFI filters, shields). Principles of designing electromagnetically compatible devices and installations. Sample analysis of typical problems related to EMC in electrical devices. Problems related to EMC in converter based drive systems. The influence of electrical equipment on the environment, living organisms and humans.						
Prerequisites and co-requisites							
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	Dissertation		50.0%		50.0%		
	Midterm colloquium		50.0%		50.0%		

Recommended reading	Basic literature	<p>Charoy A.: Zakłócenia w urządzeniach elektronicznych: zasady i porady instalacyjne. Tomy: 1 - 4, WNT 1999, 2000.</p> <p>Konczakowska A., Spiralski L., Hasse L., Kołodziejski J.: Zakłócenia w aparaturze elektronicznej. Radioelektronik Sp. z o.o., Warszawa 1995.</p> <p>Więckowski T.W.: Badania kompatybilności elektromagnetycznej urządzeń elektrycznych i elektronicznych. Wrocław 2001.</p> <p>A. Kempski: Elektromagnetyczne zaburzenia przewodzone w układach napędów przekształtnikowych. Oficyna Wydawnicza Uniwersytetu Zielonogórskiego 2005</p>
	Supplementary literature	<p>R. Smoleński: Conducted Electromagnetic Interference (EMI) in Smart Grids. Springer 2012.</p> <p>J. Łuszcz: High Frequency Conducted Emission in AC Motor Drives Fed By Frequency Converters: Sources and Propagation Path. Wiley 2018.</p>
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	EMC test report.	
Work placement	Not applicable	