GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Electromagnetic Compatibility of Electrical Equipment (EMC), PG_00041825		
Field of study	Electrical Engineering		
Date of commencement of studies	October 2020	Academic year of realisation of subject	2022/2023
Education level	first-cycle studies	Subject group	
Mode of study	Part-time studies	Mode of delivery	at the university
Year of study	3	Language of instruction	Polish
Semester of study	6	ECTS credits	3.0
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	20.0	0.0	10.0	0.0	0.0	30

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	30	5.0	40.0	75

Subject objectives

Identification of electromagnetic interference issues in electrical devices.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_W09		
K6_K05	Is able to evaluate EMC hazards occurring in electrical installations..	[SK5] Assessment of ability to solve problems that arise in practice
K6_U09		
K6_U05		
K6_K01		
K6_U10		

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

Any

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Midterm colloquium	50.0%	50.0%
Dissertation	50.0%	50.0%

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