GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Electromagnetic Compatibility of Electrical Equipment (EMC), PG_00041815		
Field of study	Electrical Engineering		
Date of commencement of studies	October 2022	Academic year of realisation of subject	2024/2025
Education level	first-cycle studies	Subject group	
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	3	Language of instruction	Polish
Semester of study	6	ECTS credits	4.0
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	30.0	0.0	30.0	0.0	0.0	60

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	60	5.0	35.0	100

Subject objectives: Identification of problems related to electromagnetic interference in electrical devices.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_K05	He can organize work in accordance with the principles of safety rules.	[SK3] Assessment of ability to organize work
K6_K01	The student knows the sources of specialist knowledge extending the scope of program content.	[SK5] Assessment of ability to solve problems that arise in practice
K6_W10	The student knows the principles of processing, use and rational use of electrical energy	[SW1] Assessment of factual knowledge
K6_U09	The student is able to select power equipment for various load modes.	[SU3] Assessment of ability to use knowledge gained from the subject

Subject contents	Sources and propagation paths of conducted and radiated disturbances. Emissivity and electromagnetic immunity of electrical devices. Electromagnetic compatibility of power electronic devices. EMC and LVD directive, harmonized standards, certification tests of electrical devices. Methods of reducing electromagnetic interference (grounding, shielding, filtration, separation, symmetrization). Basic anti-interference elements (capacitors, chokes, RFI filters, screens). Principles of designing electromagnetically compatible devices and installations. Sample analyzes of typical problems related to EMC of electrical devices. Problems related to EMC in converter drive systems. The impact of electrical devices on the environment, living organisms and humans. Rodzaje tłumaczeńTłumaczenie tekstu Tekst źródłowyŹródła i propagacja zaburzeń przewodzonych i promieniowanych. Emisyjność i odporność elektromagnetyczna urządzeń elektrycznych. Specyfika kompatybilności elektromagnetycznej urządzeń energoelektronicznych. Dyrektywa EMC i LVD, normy zharmonizowane, badania certyfikacyjne urządzeń elektrycznych. Metody ograniczania zakłóceń elektromagnetycznych (uziemianie, ekranowanie, filtracja, separacja, symetryzacja). 843 / 5000 Wyniki tłumaczeniaSources and propagation of conducted and radiated disturbances. Emissivity and electromagnetic immunity of electrical devices. The specificity of electromagnetic compatibility of power electronic devices. EMC and LVD directive, harmonized standards, certification tests of electrical devices. Methods of reducing electromagnetic interference (grounding, shielding, filtration, separation, symmetrization).Methods of reducing electromagnetic interference (grounding, shielding, filtration, separation, symmetrization).Metody redukcji zakłóceń elektromagnetycznych (uziemienie, ekranowanie, filtracja, separacja, symetryzacja).Basic anti-interference elements (capacitors, chokes, RFI filters, screens). Principles of designing electromagnetically compatible devices and installations. Sample analyzes of typical problems related to EMC of electrical devices. Problems related to EMC in converter drive systems. The impact of electrical devices on the environment, living organisms and humans. Więcej o: ofof vDefinicje ofprzyimek1expressing the relationship between a part and a whole.the sleeve of his coatprzedrostek1variant spelling of ob- assimilated before f (as in offend).skrót1Old French.of przykłady *format_quote*two weeks **of** trainingTłumaczenia ofCzęść mowyTłumaczenieTłumaczenia odwrotneCzęstotliwość *help_outline*przyimek z • with, • of, • from, • in, • out of, • for od • from, • of, • between, • for, • off, • per o • about, • of, • on, • for, • by, • at na • on, • for, • to, • at, • in, • of ze • with, • from, • of, • by, • in, • for u • at, • with,

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Prześlij opinięPanele boczne</td></tr>
<tr><td>Prerequisites and co-requisites</td><td colspan="3"></td></tr>
<tr><td>Assessment methods and criteria</td><td colspan="3"><table><tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr><tr><td>Task realisation</td><td>60.0%</td><td>100.0%</td></tr></table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td colspan="2">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.</td></tr>
<tr><td>Supplementary literature</td><td colspan="2">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.</td></tr>
<tr><td>eResources addresses</td><td colspan="2">Adresy na platformie eNauczanie:</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="3">Assessment of electromagnetic compatibility of an electrical device.</td></tr>
<tr><td>Work placement</td><td colspan="3">Not applicable</td></tr>
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