GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Electromagnetic Interference in Printed Circuit Boards, PG_00057620		
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	dr hab. inż. Jarosław Łuszcz	

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: Acquiring the ability to solve basic problems of disturbances in printed circuits

Learning outcomes

Course outcome	Subject outcome	Method of verification
K7_U03	Orderly Knowledge in the scope of EMC requirements at printed circuit design.	[SU3] Assessment of ability to use knowledge gained from the subject
K7_W01	Knowledge of the sources of knowledge specialized expanding scope of program content.	[SW1] Assessment of factual knowledge
K7_U02	Presentation skills engineering research results.	[SU5] Assessment of ability to present the results of task
K7_W02	Orderly Knowledge in the scope of EMC requirements at device design.	[SW3] Assessment of knowledge contained in written work and projects

Subject contents	PCB technology review EMI sources and propagation paths SI in analog, digital and mixed PCB circuit. PCB design rules: Components placements Layering Grounding Decoupling TL impedance matching Clock distribution EMI protection of IO interfaces RFI filtering Shielding Crosstalk Selected issues of PCB design PCB diagnostics and testing.
Prerequisites and co-requisites	

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Midterm colloquium	50.0%	100.0%

Recommended reading

Basic literature	Charoy A. Zakłócenia w urządzeniach elektronicznych. Warszawa: WNT, 2000. Ott H. W. Metody redukcji zakłóceń i szumów w układach elektronicznych. WNT 1979. Spiralski L., Kołodziejski J., Konczakowska A., Hasse L. Zakłócenia w aparaturze elektronicznej. Radioelektronik Sp. z o.o. Warszawa 1995. Howard W. Johnson, Martin Graham: High-speed Signal Propagation: Advanced Black Magic. Prentice Hall Professional, 2003.
Supplementary literature	Howard W. Johnson, Martin Graham: High-speed Signal Propagation: Advanced Black Magic. Prentice Hall Professional, 2003.
eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed	PCB project

Work placement	Not applicable