Subject card

Subject name and code	Electronic Circuit Design, PG_00038321
Field of study	Automation, Robotics and Control Systems

Date of commencement of studies	October 2025	Academic year of realisation of subject	2025/2026
Education level	second-cycle studies	Subject group	Specialty subject group Subject group related to scientific research in the field of study
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	4.0
Learning profile	general academic profile	Assessment form	exam

Conducting unit	Department Of Biomechatronics -> Faculty Of Electrical And Control Engineering -> Wydziały Politechniki Gdańskiej
Name and surname of lecturer (lecturers)	Subject supervisor: prof. dr hab. inż. Grzegorz Redlarski 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						
	Adresy na platformie eNauczanie:						

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	7.0	63.0	100

Subject objectives	The main objective of the course is to provide knowledge and skills that will allow independent design of professional electronic circuits and PCBs. Specific objectives concern the methodology of creating a schematic diagram, a component database and the methodology of creating a multilayer PCB. They also concern the ability to generate the necessary technical documentation.

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K7_K02] can interact and work in a group assuming various roles and identify priorities for the achievement of a specific task	solves basic problems in the design of electronic circuits and PCBs in a group. Distributes tasks within the team and combines the results of team work into a coherent whole.	[SK1] Assessment of group work skills
	[K7_W03] has knowledge of digital signal processing algorithms, knows methods of designing digital circuits with given parameters	uses methods and procedures to develop a schematic diagram of an electronic circuit and then design the appropriate PCB.	[SW1] Assessment of factual knowledge
	[K7_U11] is able to design and realise simple electrical circuits and control systems for a facility or industrial process using computer systems	applies methods and tools and designs basic electronic circuits and PCBs.	[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools

Subject contents	Lectures: The aim of the lectures is to present the methodology of designing electrical circuits and PCBs, starting from the principles of creating conceptual diagrams, through the stages of preparing the electronic component database and the phase of creating multilayer PCBs, and ending with adequate technical documentation. Laboratories: The essence of the laboratories is to use dedicated tools that allow for the development and execution of a strictly defined technical project, based on available software.

Prerequisites and co-requisites	Basic knowledge of robotics and mechatronics.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
		100.0%	30.0%
		70.0%	70.0%

Recommended reading	Basic literature	1. Ed. Blackwell, G.R.: "The Electronic Packaging Handbook", Boca Raton, CRC Press LLC, 2000. 2. Horowitz P. Hill W.: 'The Art of Electronics" Third Edition. Cambridge University Press.
	Supplementary literature	1. Altium Designer Guide.
	eResources addresses	

Example issues/ example questions/ tasks being completed	1. The rules connected with creation of PCB for analog circuits 2. The rules connected with creation of PCB for digital circuits 3. The rules connected with creation of PCB form microprocessor circuits 4. The rules connected with testing process during PCB's computer design
Work placement	Not applicable

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