GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Computer-Aided Designing of electrical circuits and systems, PG_00055452		
Field of study	Mechatronics		
Date of commencement of studies	October 2025	Academic year of realisation of subject	2027/2028
Education level	first-cycle studies	Subject group	Obligatory subject group in the field of study
			Subject group related to scientific research in the field of study
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	3	Language of instruction	Polish
Semester of study	5	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Department Of Electric Drives And Energy Conversion -> Faculty Of Electrical And Control Engineering -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Krzysztof Blecharz	
	Teachers		

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	15.0	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	2.0	18.0	50

Subject objectives	The aim of the course is to provide students with knowledge in the field of designing electrical and electronic systems and circuits with the use of modern computer engineering tools.

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_W05] has knowledge in the field of electrical engineering, electronics and construction materials applied in mechatronics	The student characterizes what technical solution should be applied to a specific group of technical problems in the field of mechatronics.	[SW3] Assessment of knowledge contained in written work and projects
	[K6_W08] knows and understands design and production processes of elements and simple mechatronic devices	The student is able to use technical documentation provided by manufacturers of electrical and electronic components for design purposes.	[SW3] Assessment of knowledge contained in written work and projects
	[K6_U07] is able to design elements of mechatronic systems taking into consideration given application and economic criteria, using appropriate methods, techniques and tools	The student is able to choose and use appropriate to the undertaken problem engineering software.	[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools
	[K6_U06] is able to identify and formulate specification of simple, practical engineering tasks, distinctive for mechatronics	The student is able to define a technical problem on the basis of a set of principles and rules describing the operation of a specific mechatronic device.	[SU3] Assessment of ability to use knowledge gained from the subject

Subject contents	As part of the course, students carry out projects covering the electrical and electronic parts of simple mechatronic systems. Students will learn about the stages of creating a printed circuit board design and designing power supply paths for electrical systems. In the design process, they are obliged to use dedicated modern computer programs such as CAD and CAM. For the students will be discussed the rules of creating professional technical and executive documentation.
Prerequisites and co-requisites	Basic knowledge of electronics, power electronics and electromechanics is required.

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Design exercises	50.0%	80.0%
	Lecture	50.0%	20.0%

Recommended reading	Basic literature	1. Wiatr J., Orzechowski M.: Poradnik projektanta elektryka tom 1 i tom 2, wydanie VI, Wydawnictwo Medium 2021, ISBN: 978-83-64094-70-5 2. Felba J: Montaż w elektronice, Oficyna Wydawnicza Politechniki Wrocławskiej, 2010. 3. Richard C. Dorf: The Electrical Engineering Handbook, Second Edition 2nd Edition,ISBN-13: 978-0133354492
	Supplementary literature	1. Clyde F. Coombs; Happy Holden:Printed Circuits Handbook, Seventh Edition, 2016, McGraw-Hill Education 2. D. Brooks:Signal Integrity Issues and Printed Circuit Board Design, 3. Prentice Hall, 2003.The hitchhiker's guide to PCB design : things you wish you knew yesterday and will need to know tomorrow. Rochester, NY: EMA Design Automation, Inc.
	eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed	1. Development of a power supply project for the drive system using a PLC controller 2. Development of a project of an electronic measurement system using sensors with the Hall effect. 3. Development of a project of a stabilized power supply.
Work placement	Not applicable

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