



## 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 2023		Academic year of realisation of subject		2025/2026		
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 Controlled Electric Drives -> Faculty of Electrical and Control Engineering						
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	<ol style="list-style-type: none"> <li>1. Wiatr J., Orzechowski M.: Poradnik projektanta elektryka tom 1 i tom 2, wydanie VI, Wydawnictwo Medium 2021, ISBN: 978-83-64094-70-5</li> <li>2. Felba J: Montaż w elektronice, Oficyna Wydawnicza Politechniki Wrocławskiej, 2010.</li> <li>3. Richard C. Dorf: The Electrical Engineering Handbook, Second Edition 2nd Edition, ISBN-13: 978-0133354492</li> </ol>
	Supplementary literature	<ol style="list-style-type: none"> <li>1. Clyde F. Coombs; Happy Holden: Printed Circuits Handbook, Seventh Edition, 2016, McGraw-Hill Education</li> <li>2. D. Brooks: Signal Integrity Issues and Printed Circuit Board Design, Prentice Hall, 2003.</li> <li>3. 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.</li> </ol>
	eResources addresses	Adresy na platformie eNauczenie:
Example issues/ example questions/ tasks being completed	<ol style="list-style-type: none"> <li>1. Development of a power supply project for the drive system using a PLC controller</li> <li>2. Development of a project of an electronic measurement system using sensors with the Hall effect.</li> <li>3. Development of a project of a stabilized power supply.</li> </ol>	
Work placement	Not applicable	