



## Subject card

Subject name and code	Electronics and Electrotechnics, PG_00025252						
Field of study	Chemistry in Construction Engineering						
Date of commencement of studies	October 2023		Academic year of realisation of subject		2024/2025		
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	2		Language of instruction		Polish		
Semester of study	3		ECTS credits		2.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Electrochemistry, Corrosion and Materials Engineering -> Faculty of Chemistry						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Krzysztof Żakowski				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	0.0	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		4.0		16.0	50
Subject objectives	Possesion by the student the fundamentals of electrical engineering in the understanding of the principles of generation, transmission and distribution of electricity, operation of selected electrical machines, devices, systems, operation of measuring instruments. This knowledge will be useful in the further course of study, in their future careers and in everyday life when using modern electrical and electronic equipment.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K6_K02		Student is able to adequately identify priorities required for implementation of specified tasks.		[SK5] Assessment of ability to solve problems that arise in practice		
	K6_U02		Student is able to develop and to realize a work schedule which meets deadlines.		[SU4] Assessment of ability to use methods and tools		

Subject contents	<b>Lecture</b>  - DC electrical circuits: Cells and batteries. The structure of the electrical circuit. Ohm's law. Kirchhoff's laws.  - AC electrical circuits: The phenomenon of electromagnetic induction. Bipolar sinusoidal voltage generator. RLC circuits.  - Three-phase systems: Three-phase generator. Classification of three-phase systems. Connecting receivers in a star and a triangle system.  - Electric machines: Single-phase and three-phase transformers: construction, operating conditions, classification by application. Commutator machines. DC generators and motors. Induction motors.  - Power system: Thermal, nuclear and water power stations, green energy sources. Transmission and distribution of electricity.  - Electrical installations: TN-S and TN-C-S network systems. Wires and cables. Electric light sources. Electric shock protection.  - Electrical measurements: Analog and digital meters - construction, principle of operation. Classification of measuring instruments. Basic methods and measurement layouts.  - Key elements and the electronic layouts: Semiconductors. Semiconductor junction. Diodes, transistors, thyristors. Amplifier, rectifier, power supplies, filters.  <b>Laboratory</b>  1. Measuring instruments 2. Measurements of resistance 3. Transformer 4. Houses installations 5. Diode and rectifiers 6. Operational amplifier		
Prerequisites and co-requisites	Fundamentals of physics. General knowledge of electrical engineering.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	colloquium	60.0%	50.0%
	practical exercises	100.0%	50.0%
Recommended reading	Basic literature	not applicable	
	Supplementary literature	not applicable	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		