



Subject card

Subject name and code	Electrical equipment and installations, PG_00042882						
Field of study	Environmental Engineering						
Date of commencement of studies	October 2020		Academic year of realisation of subject		2021/2022		
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 Metrology and Information Systems -> Faculty of Electrical and Control Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Ariel Dzwonkowski				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	15.0	0.0	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		5.0		20.0	55
Subject objectives	The aim of the course is to provide students with basic knowledge in the field of electrical equipment and installations.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_U01] has the ability to self-education, can obtain information from literature, databases and other sources, uses information technology, Internet resources; can integrate the obtained information, make their interpretation, as well as draw conclusions and formulate and justify opinions		Student defines and classifies basic concepts of electrical engineering. Student solves simple DC circuits.		[SU3] Assessment of ability to use knowledge gained from the subject		
	[K6_W11] has elementary knowledge of electrical devices and installations as well as basics of control and automation		Student classifies and distinguishes DC and AC machines. The student defines the means primary and secondary electric shock protection.		[SW1] Assessment of factual knowledge		
Subject contents	<p>Lectures. Basic concepts of theoretical electrical engineering. Direct and alternating current. Ohm's law. resistance guides. Kirchhoff's laws. Calculation of accident resistance. Capacitors. Sinusoidal current. Power and energy in DC and AC circuits. Three-phase systems. Machines and electric drive. Types of electric machines. Transformers. Idle state, transformer load and short circuit. types electrical machines. DC generators: external exciter, shunt and series-shunt. engines direct current: excited and serial. Synchronous alternators. Electric motors alternating asynchronous. Nominal sizes of electric machines. Regulation and stabilization engine speeds. Electrical Installations. Basic electric shock protection measures. Additional electric shock protection. Reset. Grounding and grounding. Residual current circuit breakers.</p> <p>Exercises: Basics of electrical measurements. Electrical machines and transformers. Operational safety electrical appliances. Operational measurements of electrical equipment.</p>						

Prerequisites and co-requisites	Basic knowledge of physics.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Lecture - written test.	60.0%	50.0%
	Exercises - written test.	60.0%	50.0%
Recommended reading	Basic literature	1. Miedziński B.: Elektrotechnika. Podstawy i instalacje elektryczne. Warszawa: PWN 2000. 2. Orlik W.: Egzamin kwalifikacyjny elektryka w pytaniach i odpowiedziach. Wydawnictwo KaBe 2006.	
	Supplementary literature	1. S. Bołkowski: Teoria podstaw elektrotechniki. WNT, Warszawa 1995.	
	eResources addresses		
Example issues/ example questions/ tasks being completed	1. Introduce Ohm's law.2. Introduce Kirchhoff's law I.3. Introduce Kirchhoff's Second Law.4. How is the equivalent resistance calculated when resistors are connected in series?5. How is the equivalent resistance calculated when resistors are connected in parallel?		
Work placement	Not applicable		