



Subject card

Subject name and code	Electrical Power Engineering, PG_00038404						
Field of study	Electrical Engineering						
Date of commencement of studies	October 2021	Academic year of realisation of subject			2022/2023		
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	Part-time studies	Mode of delivery			at the university		
Year of study	2	Language of instruction			Polish		
Semester of study	4	ECTS credits			4.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Department of Electrical Power Engineering -> Faculty of Electrical and Control Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Robert Małkowski					
	Teachers	dr hab. inż. Robert Małkowski					
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						
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	Mastering basic knowledge of power system functioning. Performing simple calculations load flow and short circuit.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	K6_K01	Students can name present and past advantages and disadvantages of technical solutions analyzing them for certain devices.			[SK2] Assessment of progress of work		
	K6_U04	During the course, students prepare laboratory reports of the analysis of work of power system.			[SU3] Assessment of ability to use knowledge gained from the subject		
	K6_W09	On the base of the basic mathematical relations students can describe fundamental elements of power system . Student can also estimate the influence of some selected figures on the working stats of power system.			[SW1] Assessment of factual knowledge		
Subject contents	LECTURES Basic knowledge about structure of power grid, main devices used for electrical power generation, distribution and transmission. Replacement schemes for generators, transformers, power lines, and loads. Calculating : current and power dispersion, and voltage levels in power grid. Calculating basic parameters of short circuit current. Symmetrical short circuits. CLASSES Coupling parameters of simple power grid model elements(generators, transformers, power lines) to conduct research including various load level in modelled power grid. Calculating load flow. Characterizing dependencies of voltage and/or transformer tap controllers on voltage levels and load flow in analysed grid.						
Prerequisites and co-requisites	Knowledge of basics of electroenergetics Knowledge of basics of Electrical Machinery						
Assessment methods and criteria	Subject passing criteria	Passing threshold			Percentage of the final grade		
	Project	50.0%			40.0%		
	Written exam	50.0%			60.0%		

Recommended reading	Basic literature	1. Kremens Z., Sobierajski M.: Analiza systemów elektroenergetycznych. WNT Warszawa 1996 2. Kacejko P., Machowski J.: Zwarcia w sieciach elektroenergetycznych WNT Warszawa 1993
	Supplementary literature	1. J. Machowski, J. Bialek, J. Bumby : "Power System Dynamics and Stability". John Wiley & Sons, Chichester, New York, 1997.
	eResources addresses	Adresy na platformie eNauczenie:
Example issues/ example questions/ tasks being completed	1. Which parameters of the overhead line equivalent circuit does the weather affect? Justify your answer. 2. Derive the relationship on reactive power for serial model load 3. Calculate parameters of model of the 3-winding transformer 4. Calculate voltage in the node, using the indicated method	
Work placement	Not applicable	