



## Subject card

Subject name and code	Safety of Electrical Power Engineering System, PG_00038489						
Field of study	Electrical Engineering						
Date of commencement of studies	February 2023		Academic year of realisation of subject		2023/2024		
Education level	second-cycle studies		Subject group				
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		1.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Electrical Power Engineering -> Faculty of Electrical and Control Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. inż. Ryszard Zajczyk				
	Teachers		prof. dr hab. inż. Ryszard Zajczyk				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0	0.0	15
	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	15		2.0		8.0	25
Subject objectives	To provide students with the problems of security of the power system.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K7_U10		The student recognizes basic issues in the field of electrical power security.		[SU1] Assessment of task fulfilment		
	K7_W05		The student interprets the phenomena and processes taking place in the power system		[SW1] Assessment of factual knowledge		
	K7_K04		There is no relation to this item.		[SK5] Assessment of ability to solve problems that arise in practice		
	K7_W03		The student explains the basic processes occurring in the power system in an emergency		[SW2] Assessment of knowledge contained in presentation		
Subject contents	The security of the Power system in time horizons. The existent structures of generating and transmitting electric energy, international connections, organisational and financial connections, emergency automation and restitution procedures and their influence on power security. Methodology of forecasts/ prognoses demands for electric energy. The scope and results of privatization of electrical power engineering sector. The influence of market economy and international commitments. The impact of dispersed/ distributed generation on the power system. The importance of security automation and system automation in the process of stability loss, subsystems and islands? defence arrangements and restitution of the power system. Computer simulations of the system breakdowns.						
Prerequisites and co-requisites	Knowledge of electrical Power engineering, Power systems, automation of security operations and control.						
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	Midterm colloquium		60.0%		100.0%		
Recommended reading	Basic literature		1. Machowski J., Bernas S.: Stany nieustalone i stabilność systemu elektroenergetycznego. Warszawa WNT 1989. 2. Machowski J.: Regulacja i stabilność systemu elektroenergetycznego. Oficyna wydawnicza Politechniki Warszawskiej Warszawa 2007				
	Supplementary literature		1. Kundur P.: Power System Stability and Control. McGraw-Hill, Inc. 1994.				

	eResources addresses	Adresy na platformie eNauczenie: Bezpieczeństwo systemu elektroenergetycznego [2023/24] - s. ST - Moodle ID: 35759 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=35759">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=35759</a>
Example issues/ example questions/ tasks being completed	Examples of questions and issues to develop served during the lectures.  1. Types of power system stability.	
Work placement	Not applicable	