

§ GDAŃSK UNIVERSITY § OF TECHNOLOGY

Subject card

Subject name and code	Electric Power Systems, PG_00055898								
Field of study	Power Engineering								
Date of commencement of studies	October 2024		Academic year of realisation of subject			2026/2027			
Education level	ucation 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			4.0			
Learning profile	general academic profile		Assessment form			assessment			
Conducting unit	Department of Electri	neering -> Faculty of Electrical and C			ontrol Engineering				
Name and surname	Subject supervisor	dr hab. inż. Jacek Klucznik							
of lecturer (lecturers)	Teachers								
Lesson types and methods	Lesson type	Lecture	Tutorial	Laboratory	Projec	t	Seminar	SUM	
of instruction	Number of study hours	30.0	15.0	0.0	0.0		0.0	45	
	E-learning hours included: 0.0								
Learning activity and number of study hours	Learning activity	activity Participation in classes include plan		didactic Participation in consultation hours		Self-study		SUM	
	Number of study hours	45		6.0		49.0		100	
Subject objectives	Knowledge about the transmission of electricity. Understanding the operation principles of the power system. Calculation of the of voltage levels, power losses, short-circuit currents.								
Learning outcomes	Course outcome		Subject outcome			Method of verification			
	[K6_W05] has structured knowledge in the field of electrical engineering and electronics, necessary to understand the basics of operation and selection of electrical machines, electricity transmission systems and power electronic devices		Student interprets equivalent circuits of line, transformer and generator. Student analyses radial and interconnected networks in normal conditions. Student analyses networks during faults. Student differences active and reactive power sources.			[SW1] Assessment of factual knowledge			
[K6_W08] has basic knowledge in the field of intellectual property protection and patent law, knows and understands the basic processes of energy production and use, knows and understands the principles of modern heating and power systems		The student performs the calculation of the initial short- circuit current, the power losses and voltage drops in the networks.			[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects				
Subject contents	Power system structure. Devices for generation, transmission and distributon of electric energy. Generation of active and reactive power in power system. Sources of power and its characteristics. Electrical network - structure, parameters and purposes. HVDC systems. Equivalent circuits for power system elements. Power flow calculation in radial and interconnected networks. Short-circuits - reasons and effects. Balanced short-circuits calculation.								
Prerequisites and co-requisites	Electric circuits theory								
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade				
	Midterm colloquium		50.0%		70.0%				
	Final test		50.0%			30.0%			

Recommended reading	Basic literature	Żmuda K.: Elektroenergetyczne układy przesyłowe i rozdzielcze.				
		Wybrane zagadnienia z przykładami. Wydawnictwo Politechniki Śląskiej, Gliwice 2012.				
		Kacejko P., Machowski J.: Zwarcia w sieciach elektroenergetycznych. WNT, Warszawa, 1993.				
		Lubśny Z.: Zbiór zadań z obliczeń prądów zwarciowych w systemach elektroenergetycznych, skrypt PG.				
		Irena Wasiak ELEKTROENERGETYKA W ZARYSIE Przesył i rozdział energii elektrycznej publikacja dostępna bezpłatnie w Internecie				
	Supplementary literature	leee Explore selected papers				
	eResources addresses	Adresy na platformie eNauczanie:				
Example issues/	Calculate the value of the initial short-circuit current in the network of a given structure.					
example questions/ tasks being completed	Calculate the active power losses in the power line of given data parameters and load.					
	Determine distribution of currents in the double-sided supplied network.					
Work placement	Not applicable					