



Subject card

Subject name and code	Management and Control in Power Industry, PG_00055967						
Field of study	Power Engineering						
Date of commencement of studies	October 2026	Academic year of realisation of subject				2028/2029	
Education level	first-cycle studies	Subject group				Optional subject group 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	6	ECTS credits				4.0	
Learning profile	general academic profile	Assessment form				assessment	
Conducting unit	Power Converters and Energy Storage Group -> Department of Power Electronics and Electrical Machines -> Faculty of Electrical and Control Engineering -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Robert Małkowski				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	15.0	0.0	45
	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	45		6.0		49.0	100
Subject objectives	Presentation of selected issues in the field of management and control of the operation of the power system.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[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 knows and understands the principles of the functioning of power systems.		[SW1] Assessment of factual knowledge		
	[K6_U03] has the preparation necessary to work in an industrial environment, applies the principles of occupational health and safety, can perform diagnostics of the regulation system of a simple energy facility		Students can identify selected elements of power system objects and the ways of controlling them. They can indicate positive and negative influence they have on the environment		[SU2] Assessment of ability to analyse information		

Subject contents	<p>Course content – lecture</p> <p>Lecture: Connecting electric power subsystems to parallel running after system breakdown. Frequency control in a Power Systems. Influence of automatic control of a tap changing step-up transformer on power capability area of generating unit. Voltage stability.</p> <p>Project: Coupling parameters of simple power grid model elements (generators, transformers, power lines ) to conduct research including various load level in modeled power grid</p> <p>Laboratory: Calculating load flow. Dependencies of voltage changed and/or transformer tap controllers moves on voltage levels and load flow in analyzed grid.</p>		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Lecture	50.0%	30.0%
	Laboratory	50.0%	40.0%
	Project	50.0%	30.0%
Recommended reading	Basic literature	<p>Machowski J., Lubośny Z., Białek J., Bumby J.: Power System Dynamics. Stability and Control. 3rd edition. Hoboken: John Wiley &amp; Sons, 2020. 888 s. ISBN 9781119526346</p> <p>Małkowski R.: Transformatory z regulacją przekładni pod obciążeniem w systemie elektroenergetycznym. Gdańsk: Politechnika Gdańska, 2019. 96 s. ISBN 978-83-7348-778-9</p> <p>Machowski J., Lubośny Z.: Stabilność systemu elektroenergetycznego. Warszawa: Wydawnictwo Naukowe PWN, 2018. 920 s. ISBN 978-83-01-20006-0</p>	
	Supplementary literature	<p>Kundur P.: Power System Stability and Control. New York: Mcgraw Hill 1994. ISBN 007035958X.</p>	
	eResources addresses		
Example issues/ example questions/ tasks being completed	Describe influence of automatic control of a tap changing step-up transformer on power capability area of generating unit.		
Practical activities within the subject	Not applicable		

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