



Subject card

Subject name and code	Electric Energy Market, PG_00038470						
Field of study	Electrical Engineering						
Date of commencement of studies	February 2025		Academic year of realisation of subject		2025/2026		
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		2.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department Of Electrical Power Engineering -> Faculty Of Electrical And Control Engineering -> Wydział Politechniki Gdańskiej						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Paweł Bućko				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	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		4.0		16.0	50
Subject objectives	Rules of Energy Market organization and operation.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_K05] can think and act creatively and entrepreneurially						
	[K7_U11] is able to analyse the variability of electricity loads, calculate power and energy losses, can carry out cost accounting						
	[K7_W71] has general knowledge in humanistic, social, economic or legal sciences, including their fundamentals and applications		can carry out the calculation of energy supply costs		[SW1] Assessment of factual knowledge		
Subject contents	LECTURE: Costs and prices calculation in energy sectors brief rules. Structure of electrical energy market. Market participants. Natural monopoly. Liberalization on energy markets. The Polish energy law regulation. Energy policy. Role of Regulation Office on energy markets. Brief classification of different markets segments. Electrical energy tariffs. Rules of tariffs construction. Rates in tariffs for final consumers. Tariffs of distribution companies. Minimization of electricity purchase cost by consumers. System operator and his role on energy market. The operators tariff. Purchase of electricity by distribution companies. The Polish Power Exchange rules of electricity turnover, position on energy market, energy prices, binding rules. The Balancing Market role of the Balancing Market, rules of energy turnover, energy prices, influence on other energy markets. Competitive energy markets in Poland. Other possible structure of markets (pool, Single Buyer). Local and whole-system markets. The transmissions services market. The TPA (Third Party Access) rule in Europe. The transmissions tariffs and rates. Tariffs construction cost calculation (marginal costs versus bounded costs). Ancillary services on energy market. The power reserves. Ancillary services in power and frequency control. Voltage control. Black start readiness. Island operation of subsystem. Ancillary service purchase by operator. Problems of ancillary services cost allocation.						
	LABORATORY: Analysis of the volatility of electricity prices in various segments of the electricity market. Analysis of tariff settlements. Create shopping wallets.						
Prerequisites and co-requisites	Brief knowledge of power system structure and operation						

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Midterm colloquium	50.0%	50.0%
	Exercise report	50.0%	50.0%
Recommended reading	Basic literature	Mielczarski : Rynki energii elektrycznej. ARE, Warszawa - Wrocław 2001. Weron, Weron : Giełda energii strategię zarządzania ryzykiem. CIRE, Wrocław 2000. Gładyś, Matla : Praca elektrowni w systemie elektroenergetycznym. WNT, Warszawa 1990.	
	Supplementary literature	Toczyłowski : Optymalizacja procesów rynkowych przy ograniczeniach. WPW, Warszawa 2004. Kalinowski, Malko, Szalbierz, Wilczyński : Efektywność międzynarodowego handlu energią elektryczną. KAPRINT, Lublin 1999.	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	Calculation of Power Exchange payments.		
	Calculation of Balancing Market payments.		
	Calculation of Energy tariffs payments.		
Work placement	Not applicable		

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