GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Electric Energy Market, PG_00038470		
Field of study	Electrical Engineering		
Date of commencement of studies	February 2024	Academic year of realisation of subject	2024/2025
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		
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_W12	The student knows the principles of operation of the energy market. He can distinguish between types of transactions on the wholesale energy market. He knows the basic principles of creating purchase portfolios.	[SW1] Assessment of factual knowledge
[K7_U71] is able to apply knowledge from humanistic, social, economic or legal sciences in order to solve problems	The student is able to solve problems related to the electricity market.	[SU3] Assessment of ability to use knowledge gained from the subject
[K7_W71] has general knowledge in humanistic, social, economic or legal sciences, including their fundamentals and applications	The student is able to calculate the cost of energy supply.	[SW1] Assessment of factual knowledge
[K7_K71] is able to explain the need to apply knowledge from humanistic, social, economic or legal sciences in order to function in a social environment	The student functions properly in a social group, using general knowledge in the field of humanities and social sciences.	[SK1] Assessment of group work skills
K7_K05	The student is able to compare and choose offers for the supply of electricity.	[SK5] Assessment of ability to solve problems that arise in practice
K7_U11	The student is able to calculate tariff fees for the recipient and prosumer. He distinguishes between the components of tariff fees.	[SU1] Assessment of task fulfilment

Subject contents	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 low 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.
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
Exercise report	50.0%	50.0%
Midterm colloquium	50.0%	50.0%

Recommended reading		
	Basic literature	Mielczarski : Rynki energii elektrycznej. ARE, Warszawa - Wrocław 2001. Weron, Weron : Giełda energii strategie 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