GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Electric power economics, PG_00064740		
Field of study	Power Engineering, Power Engineering		
Date of commencement of studies	February 2027	Academic year of realisation of subject	2026/2027
Education level	second-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	1	Language of instruction	Polish
Semester of study	1	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 -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Paweł Bućko	
	Teachers	dr inż. Izabela Prażuch dr hab. inż. Paweł Bućko	

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	0.0	15.0	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	5.0	15.0	50

Subject objectives

Gaining knowledge to analyze the variability of loads in the power system. Calculation of power and energy losses in power supply systems.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_W11] interprets social, economic, legal (including industrial and intellectual property laws), and other non-technical aspects of engineering activities, and includes them into engineering practice	interprets the economic consequences of load variability and is able to analyze the costs of losses in transmission systems	[SW1] Assessment of factual knowledge
[K7_U15] evaluates the feasibility of advanced methods and tools for solving complex engineering tasks of a practical nature, characteristic of the field of study, and selects and applies appropriate methods and tools for this purpose	is able to select and use calculation methods and tools for load and loss analysis in power transmission systems	[SU1] Assessment of task fulfilment
[K7_W02] demonstrates structured and theory supported knowledge encompassing key issues in the field of Power Engineering, enabling modeling and analysis of energy systems, machines and devices, transmission grids and internal installations	can model and analyze power transmission networks in order to reduce transmission losses	[SW3] Assessment of knowledge contained in written work and projects
[K7_K13] is ready for responsible performance of proffesional roles, considering ever-changing need of the society, including self developement and supporting and fullfiling work ethics	is ready to perform professional roles responsibly, taking into account changing social needs	[SK5] Assessment of ability to solve problems that arise in practice

<table>
<tr><td>Subject contents</td><td>Course content – lecture
Variability of power system loads - daily, weekly, monthly and yearly. Indicators and load grades. Calendar, ordered, and integral charts. Economic consequences variability of power system loads. Load forecasting. Power losses in systems Electricity. Load-dependent loss-dependency. Idle and load losses.
Efficiency power transmission. Minimization of losses in power systems. Energy losses in power systems. Models of variability of active and reactive loads. Calculation of active and reactive energy losses .</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>basic knowledge of electrical engineering, power systems</td></tr>
<tr><td>Assessment methods and criteria</td><td><table><tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr><tr><td>seminar presentation</td><td>50.0%</td><td>40.0%</td></tr><tr><td>colloquium - written exam</td><td>50.0%</td><td>60.0%</td></tr></table></td></tr>
<tr><td>Recommended reading</td><td><table><tr><td>Basic literature</td><td>Kit Oung: Energy Management. Gower Publishing Ltd., 2013.

Vesma V.: Energy Management Principles and Practise. British Standards Institution, London 2011.</td></tr><tr><td>Supplementary literature</td><td>Hunt S., Shuttleworth G.: Competition and Choice in Electricity. John Willey and Sons, 1997</td></tr><tr><td>eResources addresses</td><td></td></tr></table></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>Indicator analysis of daily variability of loads.Calculation of transformer losses at a given load.Calculation of losses in a transmission line at a given load.</td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
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