



## Subject card

Subject name and code	Economics and Management in Electrical Power Engineering, PG_00038356						
Field of study	Electrical Engineering						
Date of commencement of studies	October 2023	Academic year of realisation of subject			2023/2024		
Education level	second-cycle studies	Subject group					
Mode of study	Part-time studies	Mode of delivery			at the university		
Year of study	1	Language of instruction			Polish		
Semester of study	2	ECTS credits			1.0		
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	dr hab. inż. Paweł Bućko					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	10.0	0.0	0.0	0.0	0.0	10
	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	10	2.0		13.0		25
Subject objectives	Basic knowleges of technical-economics problems in power systems.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	K7_U11	The student is able to analyze the variability of electric power loads. Uses load variability indices. The student can calculate the losses of active and reactive power in transmission systems. Calculates energy losses with a known variation of loads over a period of time.			[SU1] Assessment of task fulfilment		
	K7_W12	The student recognizes the basic categories of costs. He can calculate costs. He knows the principles of choosing the optimal variant on the basis of cost accounting.			[SW1] Assessment of factual knowledge		
	K7_K02						
	K7_W08						
	K7_W03						
	K7_U09						
K7_K03							
Subject contents	Periodic changes of demand in power systems. Typical daily, monthly and yearly demand curves. Demand coefficients and ratios. Economic implication of demand changes in the system. Losses in power system. Active and reactive power losses in power system elements. Energy losses. Methods for losses calculation. Costs of the losses. Losses minimization. Costs calculation in energy sector. Discount rate. Brief rules of costs discounting. Investments processes. Costs of capital. Amortization – possible ways of calculation. Annual costs calculation. Fixed and production related costs. Costs minimization – selected, typical problems related to energy sectors. Selected management problems in power sector.						
Prerequisites and co-requisites	Brief knowledge of electrical engineering and power system						
Assessment methods and criteria	Subject passing criteria	Passing threshold			Percentage of the final grade		
	Midterm colloquium	50.0%			100.0%		

Recommended reading	Basic literature	<ol style="list-style-type: none"> <li>Górzyński J.: Audytyng energetyczny. Fundacja Poszanowania Energii, Warszawa 1999.</li> <li>Poradnik inżyniera elektryka – pr. zbiorowa, WNT. Warszawa, 2000.</li> <li>Paska J.: Ekonomia energetyki. PW, Warszawa, 2007.</li> </ol>
	Supplementary literature	<ol style="list-style-type: none"> <li>Warnecke H.J., Bullinger H.J., Hichert R., Voegele A.: Rachunek kosztów dla inżynierów. WNT. Warszawa 1993.</li> <li>Siegel J.G., Shim J.K., Hartman S. W.: Przewodnik po finansach. Wydawnictwo Naukowe PWN, Warszawa 1995.</li> </ol>
	eResources addresses	<p>Adresy na platformie eNauczenie:</p> <p>GOSPODARKA I ZARZĄDZANIE W ELEKTROENERGETYCE [ET][II]  [Niestacjonarne][2023/24] - Moodle ID: 36121  <a href="https://enauczenie.pg.edu.pl/moodle/course/view.php?id=36121">https://enauczenie.pg.edu.pl/moodle/course/view.php?id=36121</a></p>
Example issues/ example questions/ tasks being completed	<ol style="list-style-type: none"> <li>1. Calculation of power losses in the transmission grid.</li> <li>2. Analyse of daily load change.</li> <li>3. Calculation of energy losses in the chosen transmission grid element.</li> </ol>	
Work placement	Not applicable	