



Subject card

Subject name and code	Economics and Management in Electrical Power Engineering, PG_00038482						
Field of study	Electrical Engineering						
Date of commencement of studies	February 2023		Academic year of realisation of subject		2023/2024		
Education level	second-cycle studies		Subject group				
Mode of study	Full-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	15.0	0.0	0.0	0.0	0.0	15
	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	15		2.0		8.0	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 power loads, calculate power and energy losses.		[SU1] Assessment of task fulfilment		
	K7_W12		The student is able to solve problems related to electricity management.		[SW3] Assessment of knowledge contained in written work and projects		
	K7_W12		The student is able to calculate energy costs.		[SW3] Assessment of knowledge contained in written work and projects		
	K7_U09		The student is able to analyze the economic aspects of the investment.		[SU1] Assessment of task fulfilment		
	K7_W08		The student is able to calculate energy losses in transmission systems and is able to minimize them.		[SW3] Assessment of knowledge contained in written work and projects		
	K7_K02		The student is able to assess the impact of energy installations on the environment.		[SK5] Assessment of ability to solve problems that arise in practice		
Subject contents	K7_K03		The student is able to work in a group.		[SK1] Assessment of group work skills		
	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"> 1. Górzyński J.: Audytting energetyczny. Fundacja Poszanowania Energii, Warszawa 1999. 2. Poradnik inżyniera elektryka pr. zbiorowa, WNT. Warszawa, 2000. 3. Paska J.: Ekonomia energetyki. PW, Warszawa, 2007. 4. Kamrat W.: Gospodarka energetyczna. PWN, Warszawa, 2023.
	Supplementary literature	<ol style="list-style-type: none"> 1. Warnecke H.J., Bullinger H.J., Hichert R., Voegele A.: Rachunek kosztów dla inżynierów. WNT. Warszawa 1993. 2. Siegel J.G., Shim J.K., Hartman S. W.: Przewodnik po finansach. Wydawnictwo Naukowe PWN, Warszawa 1995.
	eResources addresses	<p>Adresy na platformie eNauczanie:</p> <p>GOSPODARKA I ZARZĄDZANIE W ELEKTROENERGETYCE [2023/24] - Moodle ID: 32208</p> <p>https://enauczanie.pg.edu.pl/moodle/course/view.php?id=32208</p>
Example issues/ example questions/ tasks being completed	<ol style="list-style-type: none"> 1. Calculation of power losses in the transmission grid. 2. Analyse of daily load change. 3. Calculation of energy losses in the chosen transmission grid element. 	
Work placement	Not applicable	