



Subject card

Subject name and code	Forecasting and Developmental Planning in Power Engineering, PG_00046002						
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		3.0		
Learning profile	general academic profile		Assessment form		exam		
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				
			dr inż. Izabela Prażuch				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	15.0	0.0	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		6.0		39.0	75
Subject objectives	Understanding the factors influencing the electricity demand. Understanding the basic methods of forecasting the demand in various time horizons. acquiring the ability to apply power forecasts in basic design and planning issues in the power industry.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K7_U11		The student knows the basic cycles of load variability in the power system and knows their features. Can forecast load variability over different time horizons.		[SU4] Assessment of ability to use methods and tools		
	K7_W12		The student is able to assess the economic effects of power forecasts. Knows how to create forecasts for the needs of electricity market analysis.		[SW1] Assessment of factual knowledge		

Subject contents	Stochastic nature of the power loads variability. Basic factors influencing the course of the load in time. Division of energy forecasts according to the planning horizon. Basic applications of energy forecasting. Application of a simple extrapolation of past trends in a forecasting application. Econometric models used in forecasting. Methods of forecasting the daily load variability used in KDM. Methods of forecasting weekly and annual load variability used in KDM. Models of seasonal load variability. Component functions of the process. Static and dynamic variability. Forecasting the process of variability of power demand. Applications of multiple regression to forecasting in power engineering. Multiple correlation coefficient (R). Analysis of the influence of independent variables on the regression equation. Applications of neural networks for forecasting. Planning the level of power reserve in the system. Reserve concepts: spinning, hot, cool and cold. Statistical method used to determine electricity production plans by power plants and combined heat and power plants in individual months of the year. Planning of repairs. Classification of repairs of power units. Optimization of renovation periods for blocks. Factors affecting the duration of renovation for a selected block. Problems of forecasting the development of the production system. Taking the demand side into account in programming the development of the power industry. "Integrated System Development Planning". Formulating the problem of forecasting the development of a production system - optimization criterion. Calculation of energy generation costs for past block structures.Prześlij opinięHistoriaZapisaneSpołeczność		
Prerequisites and co-requisites	basic knowledge of energy management and economics.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	exam	50.0%	100.0%
Recommended reading	Basic literature	1. Gładys H., Matla R.: Praca elektrowni w systemie elektroenergetycznym, WNT, Warszawa 1999. 2. Dobrzańska I. i inni: Prognozowanie w elektroenergetyce. PCz, Częstochowa 2007.	
	Supplementary literature	1. Pr. zbiorowa : Analiza i prognoza obciążeń elektroenergetycznych, WNT, Warszawa 1971.	
	eResources addresses	Adresy na platformie eNauczanie: PROGNOZOWANIE I PLANOWANIE ROZWOJU W ENERGETYCE [2023/24] - Moodle ID: 32209 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=32209	
Example issues/ example questions/ tasks being completed	forecasting the daily variability of electricity loads,forecasting the annual seasonality		
Work placement	Not applicable		