GDAŃSK UNIVERSITY OF TECHNOLOGY

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 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	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	

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_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
	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

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. Gładyś 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:	
Example issues/ example questions/ tasks being completed	forecasting the daily variability of electricity loads,forecasting the annual seasonality		
Work placement	Not applicable		