GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	ADVANCED FORECASTING METHODS, PG_00061092		
Field of study	Economic Analytics		
Date of commencement of studies	October 2023	Academic year of realisation of subject	2024/2025
Education level	second-cycle studies	Subject group	Optional subject group 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	2	Language of instruction	English
Semester of study	3	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Katedra Statystyki i Ekonometrii -> Faculty of Management and Economics		
Name and surname of lecturer (lecturers)	Subject supervisor	dr Aneta Sobiechowska-Ziegert	
	Teachers	dr Aneta Sobiechowska-Ziegert	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	0.0	30.0	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	8.0	37.0	75

Subject objectives

Designs innovative solutions to complex economic phenomena, taking into account many factors shaping them and selecting appropriate methods to achieve a satisfactory result

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_W03] demonstrates in-depth preparation in the application of analytical methods and techniques for formulating and solving problems	uses advanced methods of forecasting economic phenomena, correctly formulating the research problem and selecting appropriate methods of solving it	[SW1] Assessment of factual knowledge
[K7_U01] creates innovative solutions to complex and unstructured problems, taking into account the variability of the environment by synthesising information from many sources	obtains multi-variant innovative solutions using appropriate techniques for assessing and selecting scenarios based on in-depth knowledge, taking into account many factors influencing the studied phenomenon	[SU3] Assessment of ability to use knowledge gained from the subject

Subject contents

Forecasting by analogy - criteria for similarity of variables, partial and global forecasting
Forecasting by analogy - leading and imitating variable
Use of spatial-temporal variables for forecasting
Forecasting of qualitative phenomena - probit and logit models
Forecasting of qualitative phenomena - aggregate (synthetic) variables
Forecasting on the basis of cohort analysis models
Warning forecasting in the enterprise
Creation of scenarios for the company
Combined forecasts and integration of qualitative and quantitative forecasts
Principles and methods of creating long-term forecasts - testing the structural stability of the model
Principles and methods of creating long-term forecasts - the idea of a crawling section
Application of neural networks in forecasting - introduction, types of networks
Application of neural networks in forecasting - network architecture, model testing and validation

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Tasks to be done	55.0%	60.0%
Test	55.0%	40.0%

Recommended reading	Basic literature	Tadeusiewicz R, Szaleniec M., Leksykon sieci neuronowych, Wydawnictwo Fundacji Projekt Nauka, Wrocław 2015 Miller A., Bućko P. Zastosowanie sieci neuronowych do prognozowania cen na giełdzie energii, ZN WEiA PG nr 40, Gdańsk 2014 Zeliaś A., Pawełek B., Wanat S., Prognozowanie ekonomiczne, teoria, przykłady, zadania, PWN 2003 Cieślak M., red. Nauk. Prognozowanie gospodarcze. Metody i zastosowania, PWN 2022 Maciąg A., Pietroń R., Kukla S., Prognozowanie i symulacja w przedsiębiorstwie, PWE, Warszawa 2013
	Supplementary literature	Cieślak M., red. Nauk. Prognozowanie gospodarcze. Metody i zastosowania, PWN 2022
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	Based on the database for a specific variable, using the spatio-temporal analogy method with an angular shape similarity measure, calculate an expired sequential forecast for the selected country and check its accuracy Based on the database, estimate the logit model of the probability of causing an accident and set forecasts of the probability of causing an accident within a year from the moment of signing the TPL contract for drivers aged 20, 25, 30 and 35, depending on the time of holding a driving license Based on a database of income and expenditure on basic goods, randomly selected families and information on car ownership, use the neural network as a classifier of car-owning families depending on income and expenditure	
Work placement	Not applicable	